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SKEPTICAL INQUIRER

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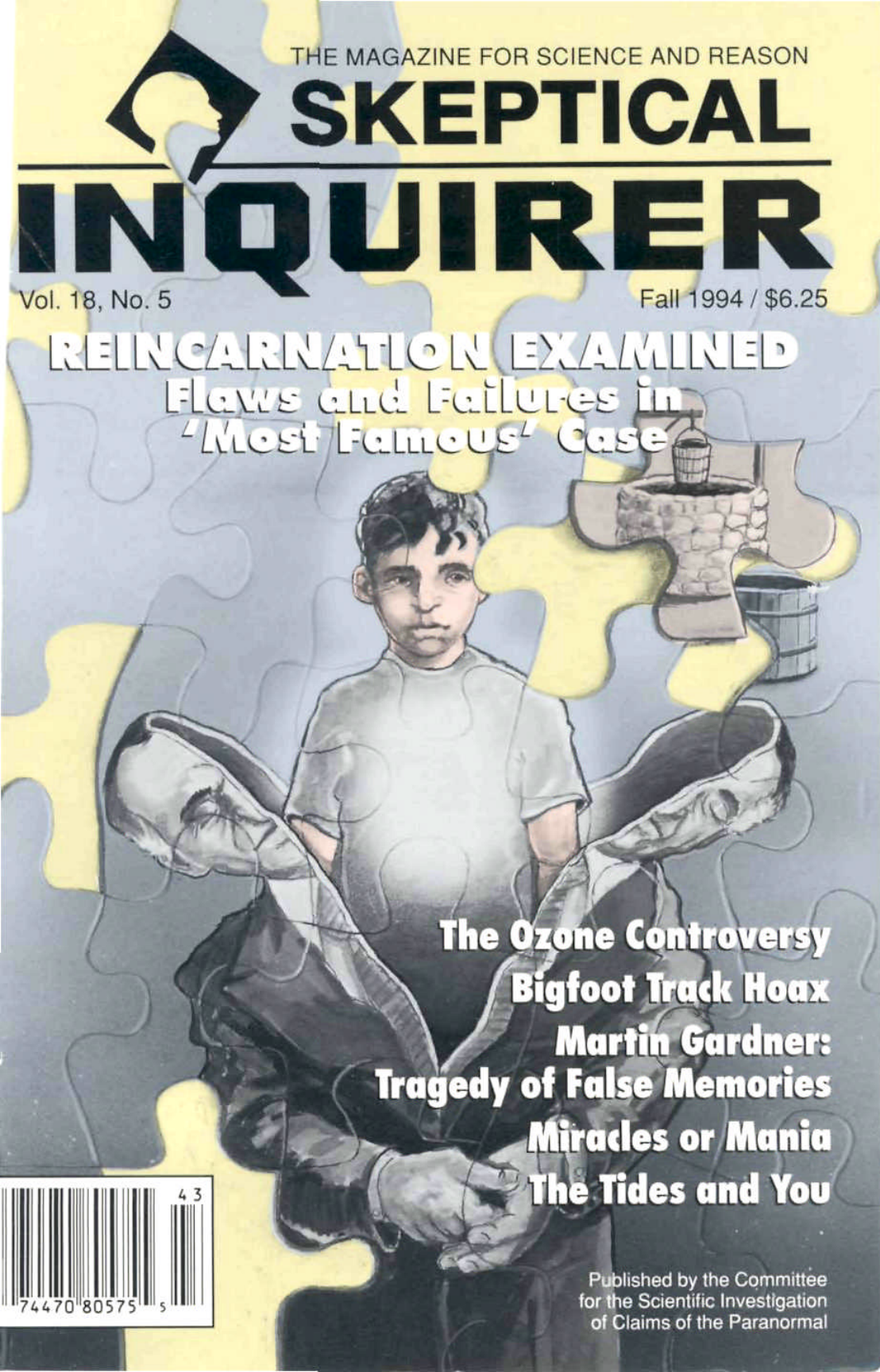
REINCARNATION EXAMINED
Flaws and Failures in 'Most Famous' Case



The Ozone Controversy
Bigfoot Track Hoax
Martin Gardner: Tragedy of False Memories
Miracles or Mania
The Tides and You

Published by the Committee for the Scientific Investigation of Claims of the Paranormal

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SKEPTICAL INQUIRER

Vol. 18, No. 5, Fall 1994

Journal of the Committee for the Scientific Investigation of Claims of the Paranormal

SPECIAL REPORT

Miracles or Mania? — *Joe Nickell* — **477**

ARTICLES

Empirical Evidence for Reincarnation? Examining Stevenson's Most Impressive Case — *Leonard Angel* — **481**

A Reader's Guide to the Ozone Controversy — *Boyce Rensberger* — **488**

Reaction to My Ozone Story — *Boyce Rensberger* — **496**

Bigfoot Evidence: Are These Tracks Real? — *Michael R. Dennett* — **498**

Why We Are Unmoved as Oceans Ebb and Flow — *Paul Quincey* — **509**

Scientific Investigation of Anomalous Phenomena in Kazakhstan — *Sergey Efimov* — **516**

FROM THE EDITOR

A Big Change: Join Us in This New Adventure — *Kendrick Frazier* — **450**

NEWS AND COMMENT — **453**

"Barney" Media Hoax / Recollections Clash on Roswell 'UFO' Crash / New Agers Go for Third Party Conservatives / In Memoriam: Nick Spanos / Martial Arts Win Lawsuit in China

CSICOP NEWS — **461**

NOTES OF A FRINGE-WATCHER

The Tragedies of False Memories: The Accused Are Striking Back, But Grave Injustices Have Been Done — *Martin Gardner* — **464**

PSYCHIC VIBRATIONS

Satanic Paranoia in Texas, Psychics Among the Stars — *Robert Sheaffer* — **474**

BOOK REVIEWS

Curtis Peebles, *Watch the Skies! A Chronicle of the Flying Saucer Myth* — *Robert R. Young* — **522**

Susan Blackmore, *Dying to Live* — *Robert A. Baker* — **524**

Grover S. Krantz, *Big Footprints* — *Robert Boston* — **528**

NEW BOOKS — **532**

ARTICLES OF NOTE — **533**

FORUM

Deep Ecology or Deep Sanity? — *Ralph Estling* — **539**

Did Fiction Give Birth to Bigfoot? — *Hugh H. Trotti* — **541**

Confessions of a Lone Skeptic — *Elena M. Watson* — **543**

LETTERS TO THE EDITOR — **546**

GUIDE FOR AUTHORS — **557**

ON THE COVER: Illustration by Bruce Adams.

From the Editor

A Big Change: Join Us in This New Adventure

With this Fall issue of the SKEPTICAL INQUIRER, one era ends and an exciting new one will begin.

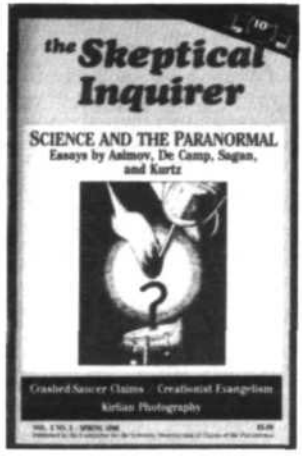
This is our last quarterly, digest-size issue. The next issue you receive will have an enlarged, standard-size (8½" × 11") format. It will be redesigned graphically. Most important, from that time on you will receive six issues a year instead of four. We are increasing our frequency to bimonthly.

That first bimonthly issue will be January–February 1995. It will be a special issue indeed, in content as well as format, and we are looking forward to it. We hope you will like it, and feel confident you will.

One other change. We decided not to wait until the redesigned magazine to implement it. We've added a subtitle: "The Magazine for Science and Reason." I think that's about as close as we can come in a few key words to saying what we stand *for*.

(So that, for the first time, volumes will accord with a calendar year, we are designating this Fall 1994 issue Number 5 of Volume 18—our first and only five-issue volume! Volume 19 will begin with the January–February issue and end with the November–December 1995 issue.)

Sharp-eyed readers will have noticed announcements in our past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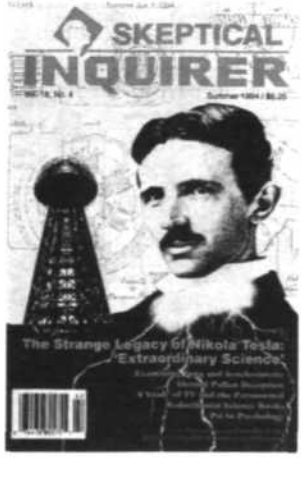


two issues about this, but I also want you to hear it from me.

The Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP) was founded amid a flurry of national publicity (and inevitable controversy) at the State University of New York at Buffalo in Amherst, New York, on May 1, 1976. The first issue of the SKEPTICAL INQUIRER (initially called *The Zetetic*, which means much the same in Greek) came out that fall, dated Fall–Winter 1976. It began in the 6" × 9" digest size, and we have maintained that for all these years.

We started modestly. For the first two years we published just two issues a year. Then with Fall 1978 we went quarterly. As the demand grew for more and more articles and investigations, we increased the pages per issue from 80 to 96 and then to 112. We even trimmed the margins and reduced type sizes in an effort to get more material into each issue. Meanwhile our circulation expanded from an initial few thousand for those first several issues, to 10,000 by the early 1980s, to the 35,000 or so of today.

I became editor in August 1977 with the third issue, fresh from some wonderful years as editor of *Science News* in Washington. It has been my privilege to shepherd the SKEPTICAL INQUIRER through these years of steady growth. I hope to remain doing so, and we certainly hope the growth will continue, even accelerate.

Although probably the majority of you are fairly new to the magazine, we have many thousands of readers and supporters who have been with us for a number of years, and some since the very beginning. We are very grateful to you. I think we have the best readers in the world—intelligent, thoughtful, curious, questioning, and concerned. We try our best to match up to your challenge. And you've been

faithful and very supportive—you've provided essential financial and moral support, and our renewal rates have always been excellent.

So it's not without some nostalgia that we leave our comfortable little format behind and plunge ahead to a standard magazine size. Like you, I've always liked the way our issues are easy to carry around and how they fit nicely on a bookshelf. It was part of our distinction.

But for some years now I have been wondering how we can get more material to you in a more timely manner. Last year we saw how we might do it.

We learned that printing our smaller digest size costs more per unit area than printing in standard size; in addition, fewer and fewer printers are set up to do it. So it turned out that we could reduce costs by going to a larger page size. After much deliberation, the Executive Council decided to take advantage of this opportunity. We'd go to the larger page size and plow whatever economy could be achieved back to you in an expanded SKEPTICAL INQUIRER. The economies aren't enough in themselves to make possible two extra issues a year, but we decided to go bimonthly nevertheless. A slight subscription price increase (18 percent, compared with a 50-percent increase in frequency—and content) will make up some of the difference. The rest is up to you. We're banking on your appreciating the larger size and more frequent publication, and your resubscribing for the long term. We ask you to tell your friends and colleagues about us and in that way help us to build an even stronger base of readers.

Before doing all this we conducted a random-sample survey of subscribers. Respondents enthusiastically (3:1 margin) embraced the idea of increasing our frequency to six issues a year; and if to do so meant increasing our page size, they felt that was okay. Most said the page size didn't matter that much to them.

I expected that. Our readers are very content oriented. It's what's inside that counts to you, and that's going to stay the same, or get better. That's our pledge to you. Stay with us for this next new adventure.

As always, we appreciate your support, and your ideas and suggestions.

* * *

It's just a coincidence (*really!*) but after 17 years the SKEPTICAL INQUIRER editorial office in Albuquerque has moved to a new address. That's because we moved to a new home this summer, and the SKEPTICAL INQUIRER Editor's Office is again set up within it. The new address for all editorial correspondence is: **944 Deer Drive NE, Albuquerque, NM 87122-1306.** The editor's new fax number is: **505-828-2080.** CSICOP headquarters and the subscription address remain unchanged.

—*Kendrick Frazier, EDITOR*

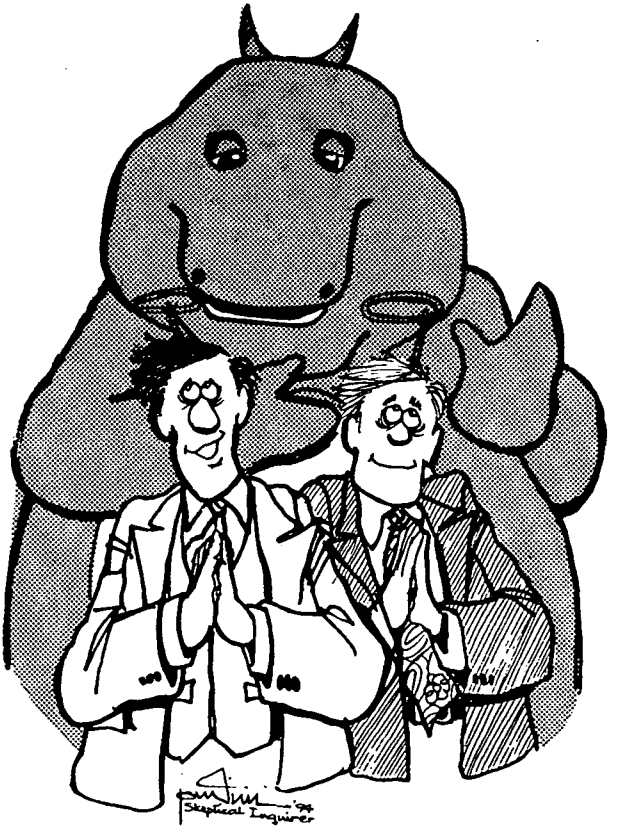
News and Comment

The Devilish 'Barney' Media Hoax

Barney, the purple dinosaur star of Public Television, might seem the least likely candidate on earth to be conveying messages from Hell to our children. But that's the point—and the impetus—behind a Tampa Bay comedy team's prank that soon mushroomed unexpectedly to national proportions.

John M. Bunch, Jr., and David J. Bennett are known by day on Tampa's University of South Florida campus as graduate students in psychology. By night, their comedy club audiences know them as "The Human Kennel." For a few heady weeks this past February, the media unwittingly introduced them to the world as Luscious M. Bromley and Jack Herman, fundamentalist Christian founders of a group called Citizens Concerned About Barney.

As first reported by the Tampa Bay area TV, radio, and print media, and then nationally by CNN and the



Associated Press, front man "Bromley" charged that the lovable, lavender Barney is actually "the most powerful symbol of current evilness that is going to lead this country right down the tubes." Sporting a tacky polyester suit purchased from a thrift store especially for the occasion, "Bromley" deadpanned that Barney's message of "Satanism, occultism and witchcraft" is leading our kids by the hand inexorably toward the slippery slope of "cocaine, gang violence, pornography, abortion, homosexuality, and maybe even marijuana." Perhaps an even greater danger is that the mere inference that *real* dinosaurs existed millions of years ago threatens to undermine the Christian faith: "If one truly believes in the Bible, the world is six thousand years old, period! What we're seeing is the promotion of the evolution theory, and putting in the minds of children that the Bible is not necessary to explain the origin of man."

"Bromley's" Barney bubble finally burst when someone who recognized him tipped off the press. But by then the many "red flags" raised by the "Kennel's" crazy claims were already creating angst amongst those professionals who had fallen for the bogus bit. Mea culpas began to fill the pages of the local papers, and the Tampa Bay chapter of the Society of Professional Journalists decided to hold a public meeting to discuss "How the Media Got Hoodwinked." (The panel consisted mostly of hoaxed reporters, "Bromley," and myself, as founder of the Tampa Bay Skeptics.)

Conspicuously absent from the gathering was Thomas J. Billitteri, religion editor of the *St. Petersburg Times*, whose views were clearly expressed in his February 19 column, "Barney Hoax Is No joke": "Okay, so the two puerile pinheads . . . have had their day. But what a sad commentary on our culture when religious bashing and thinly veiled hate can be viewed by two grown men as 'funny' . . . every bit as offensive as racial, ethnic or gender stereotyping. . . . Making a laughingstock of . . . fundamentalists . . . is repugnant. . . . It harkens back to an era when Catholics were demonized [and] Jews were driven out of 'Christian' neighborhoods."

But "Bromley"/Bunch, in a letter to the editor, gave back as good as he got: "Puerile? Sometimes. Pinheads? I doubt it. Religious bashing and thinly veiled hate? No way. Since Billitteri has found it necessary to stoop to name-calling, how's about I call him Mr. Hyper-Inflated Pseudo-Intellectual Pumpkinhead? . . . What's wrong with taking a shot at hypocritical, anti-intellectual, old lady's Social-Security-check-grabbing TV preachers?"

Ironically, it was Billitteri—in a column just three weeks earlier about *The Five Gospels*, a new book reporting on the research of 78 Bible scholars—who had informed his readers of the consensus view that Jesus made no claims to be the messiah and that Christianity was the invention of "skilled fiction writers." I pointed out at the SPJ meeting that a few fundamentalist Christians with whom I had discussed this matter found that column infinitely more offensive than they did the Barney hoax. And, interestingly, when I asked for a show of hands, no one on the panel or in the audience expressed agreement with Billitteri's harsh characterization of "The Human Kennel's" devilish dinosaur caper.

—*Gary Posner*

Gary Posner, an internist in Tampa, Florida, founded the Tampa Bay Skeptics in 1988. He edits and publishes the Tampa Bay Skeptics Report.

Conflicting Recollections In Witnesses' Accounts of Roswell 'UFO' Crash

Even an honest person's recollection of events that took place more than 40 years earlier are likely to be inaccurate, especially if the person has been exposed to sensationalist accounts of the event in books and articles, and on TV. This is demonstrated in one eight-page chapter in the recent book *The Truth About the UFO Crash at Roswell*, by Kevin Randle and Don Schmitt (New York: M. Evans).

More important, this brief Chapter 12 provides a revealing insight into the criteria used by Randle and Schmitt to determine which recollections are accurate and which are flawed.

Randle and Schmitt conducted a relentless search for witnesses to events that supposedly occurred in July 1947. They managed to locate and interview Jason Kellahin, then an Associated Press reporter based in Albuquerque, who was dispatched to Roswell shortly after Roswell Army Air Field announced on July 8 that it had recovered one of the mysterious "flying disks."

By the time Kellahin was interviewed in early 1993, three books on the subject had been published, including Randle and Schmitt's first book, *UFO Crash at Roswell*, published in 1991. More important, tens of millions of TV viewers had seen highly sensationalistic versions of the "Roswell Incident" on such programs as "Unsolved Mysteries."

According to Kellahin, he was accompanied by Robin A. Adair, also based in the AP's Albuquerque bureau, who came along to operate the then-new equipment used to transmit photos over ordinary telephone lines.

It was around noon on July 8, 1947, when Lieut. Walter Haut, the Roswell Army Air Field's press officer, hand-carried his now famous press release to Roswell's two newspapers and two radio stations, announcing that RAAF had recovered one of the mysterious "flying disks" reported two weeks earlier by private flyer Kenneth Arnold. The Haut report went out on the AP and UP wire services around 2:00 P.M. local (Mountain) time.

In Randle and Schmitt's 1993 interview, Kellahin recalled receiving a call from AP headquarters in New York instructing him and Adair to drive to Roswell. Allowing time for Kellahin and Adair to round up and load the photo-transmission equipment and to go home to pack bags for an overnight stay in Roswell, it would probably have been around 4:00 P.M. before they departed for Roswell. Today, with a four-lane highway part of the way, the drive takes at least three hours. In 1947, it probably took four hours. On this basis, Kellahin and Adair would not have arrived in Roswell until around 8:00 P.M., perhaps closer to 9:00 P.M.

When the two AP men arrived in the offices of the *Roswell Daily Record*, they would have learned that the material recovered from the ranch of Mac Brazel, which earlier had been flown to 8th Air Force Headquarters in Fort Worth, had been identified as debris from a balloon-borne radar reflector. So Kellahin interviewed rancher Brazel and filed his story, which was published the next day. Adair took Brazel's picture, but it was not until early the next morning (July 9) that Adair's equipment was operational and the photos could be sent out to AP subscribers.

In the 1993 interview, Kellahin recalled departing from Albuquerque in the *morning*. Roughly half-way, just

south of Vaughn, N.M., on Highway 285, Kellahin recalled seeing a lot of military, police, and civilian cars, prompting him to turn off the main highway and to locate the Brazel ranch.

Kellahin recalled that he met Brazel at the ranch, that he interviewed him, and that Adair took photos of Brazel as well as "the stuff [debris] lying on the ground." Randle and Schmitt quote Kellahin as saying that the military personnel "didn't interfere with me. I went wherever I wanted to go." Kellahin said he had a chance to examine the debris: "It wasn't much of anything. Just some silver-colored fabric and a very light wood . . . a light wood like you'd make a kite with. . . . You have to have known [what it was]. But it was a balloon. It looked more like a kite than anything else."

Kellahin recalled that while he was at the ranch, the military finished gathering the debris and said they were going back to Roswell and would take Brazel along. So, according to Kellahin's recollections, he and Adair followed them into Roswell.

Randle and Schmitt correctly point out several major flaws in Kellahin's recollections. For example, he could not have left Albuquerque in the morning of July 8 because the Haut release did not go out until around noon. And they correctly question his account of having found the Brazel ranch, because it is located some miles to the west of Highway 285. They also note that none of the photos that Kellahin recalled Adair taking of the debris on the Brazel ranch were ever published.

There are other discrepancies beyond those noted by Randle and Schmitt. If Kellahin had interviewed Brazel at the ranch, taken Brazel's photo, and photographed the debris, there would be no need to drive another hundred miles to Roswell to interview Brazel in the offices of the *Roswell Daily Record*. (Photos showing Kellahin and Adair in the Roswell newspaper offices were published in the July 9, 1947, edition.)

When Randle and Schmitt located and interviewed Robin Adair shortly after interviewing Kellahin, some of his recollections flatly contradicted those of Kellahin but were more compatible with their military cover-up hypothesis. Adair claimed he had been in El Paso, Texas—not in Albuquerque—when AP headquarters in New York called. Adair said that he was authorized to go to the considerable expense of chartering an airplane to quickly reach Roswell.

But before Adair finally landed at Roswell, he claimed the aircraft managed to locate the Brazel ranch and flew over it half a dozen times, trying, unsuccessfully, to photograph the debris. Randle and Schmitt quote Adair as saying: "Even then the place was surrounded by policemen, FBI people. They wouldn't let us get within three-quarters of a mile of the place. We were afraid to go too low. Afraid they would shoot at us." Yet Adair claims he could identify persons on the ground as "policemen, FBI people." And Adair recalled seeing gouge marks, adding: "Whatever hit the ground wasn't wood or something soft. It looked like it was metal."

Thus Adair's recollections provide support for the Randle and Schmitt's claim that the Brazel ranch debris came from an extraterrestrial craft, unlike Kellahin's references to a balloon and kitelike construction, which supports the official Air Force explanation that the debris came from a balloon-borne radar reflector. Also, Kellahin's recollections that the military made no effort to keep him away from the debris field challenges Randle and Schmitt's basic cover-up hypothesis.

This is the "impact site" where a flying saucer crashed 47 years ago and was secretly recovered, along with several ET bodies, by the Air Force, according to the new book *The Truth About the UFO Crash at Roswell,* coauthored by Kevin Randle and Don Schmitt. In their first book, published three years before, Randle and Schmitt claimed the UFO crashed 45 miles to the northwest, where rancher Mac Brazel found debris consisting of tinfoil, balsa-wood sticks, and a rubberlike material. Crashed-saucer enthusiasts reject the Air Force explanation that the debris was the remains of a balloon-borne radar reflector. Now, based on "newly discovered witnesses," Randle and Schmitt claim the UFO suffered a serious explosion over the Brazel ranch but managed to fly 45 miles southeast only to crash in this ravine—killing all its occupants. Serious discrepancies in the new "crashed saucer scenario" were spotted by Philip J. Klass during his Roswell interviews with two of the key "witnesses," as reported in the May issue of his *Skeptics UFO Newsletter.* Photo above shows Schmitt (see arrow) pointing in direction of Brazel ranch following recent press conference. (Photo by Philip J. Klass.)

Could this explain why Randle and Schmitt do not challenge any of Adair's recollections, such as that the AP authorized him to charter an airplane to get from El Paso to Roswell quickly? El Paso and Albuquerque are roughly the same distance from Roswell, yet Kellahin was not authorized to go to the expense of chartering an airplane.

Nor do Randle and Schmitt question how Adair's pilot would be able to locate the Brazel ranch. Haut's press release did not give even the approximate location or mention Brazel's name. Randle and Schmitt write: "Adair flew over the area, searching for the crash site. His descriptions, though vague, match those provided by other first-hand witnesses."

But hold the boat. In Randle and Schmitt's new book they claim that, although a large ET craft exploded while flying over the Brazel ranch, it managed to fly 45 miles south and crash land near Roswell at what is called the "impact site." If Adair, during a flight from El Paso, was searching, he should first have discovered the impact site near Roswell, not the debris field on the Brazel ranch 45 miles further north. But Randle

and Schmitt overlook this discrepancy.

They point out the discrepancies in Kellahin's recollections, and note that he had a copy of *The Roswell Incident*, the first book on the subject published in 1980. If they asked Adair if he had read any of the Roswell books or seen any of the numerous TV shows on the subject, they do not mention it in their book.

What conclusions do Randle and Schmitt draw from their interviews with Kellahin and Adair? Chapter 12 concludes with these words: "The point, however, is that we can take the testimonies of the two men and the documentation, and reconstruct, with a fair amount of accuracy, what happened on July 8 and 9, 1947. We can do it because we are dealing with recent history [*sic*]. We have the men who were involved, and just as important, we have a written record from the time frame. Without those two items, we would be left to speculate."

—*Philip J. Klass*

New Age Believers Favor Third-Party Conservatives

A Rhode Island College psychologist says he has uncovered a strange quirk in the voting behavior of people who believe in psychic powers, UFOs, and other elements of the supernatural.

While most believers tend to be liberal in their views, Tom Randall, who chairs the college's psychology department, says his surveys have shown that a disproportionate number tend to vote for third-party conservatives.

Randall's findings are based on a questionnaire he developed to determine the extent of a person's paranormal beliefs. Volunteers were asked to agree or disagree with such statements as: "In spite of the laws of science, some people can use their psychic powers to make objects move" and "As a general rule, UFO sightings can best be explained as overreactions by people to naturally occurring events."

As other researchers have found, people who believed in the supernatural tended to describe themselves as liberals.

But when Randall asked them how they usually voted, many of the liberals said they favored third-party conservatives. Third-party supporters had, by far, the highest level of belief in the paranormal. (Republicans had the lowest.)

Randall said the findings seem to suggest that such supporters of third-party conservatives may be embracing candidates who offer quick, easy, and almost magical solutions to problems.

"I suspect a degree of magical thinking characterizes (the type of voter) who is dazzled by the charismatic charm of, say, a Ross Perot, but whose thinking may be short on detailed logical analysis," Randall said.

Randall said one example of the unexpected mix of New Age views and political conservatism comes from last December's Russian parliamentary elections, where the biggest vote-getter was Anatoly Kashpirovsky, a faith-healer whose claims include being able to cure asthma, hernias, and AIDS without touching the patient. Kashpirovsky ran under the banner of the ultranationalist Liberal Democratic Party led by Vladimir Zhirinovsky, who wants to take Russia

(continued on p. 460)

In Memoriam: Nick Spanos

On the weekend of June 4-6, 1994, Nicholas P. Spanos flew his own plane to his former home in Edgartown, Massachusetts. On his return trip to Ottawa, he ran into bad weather and crashed. His death, at age 52, is a terrible and tragic loss not only to his family and friends but also for the science of psychology and the humanistic and skeptical causes.

Nick was not only a productive and prolific scholar but also a great teacher and mentor, as well as one of the world's foremost authorities on hypnotic phenomena and social psychology. In a 1991 article that examined eminence among social psychologists, Nick was ranked one of the hundred most eminent, and in terms of productivity he was ranked third in the world.

Although most of his professional career was spent at Carleton University in Ottawa, he was an American by birth and received his B.A. and Ph.D. degrees from Boston University. After getting his doctorate in individual, group, and family psychotherapy, he joined the Medfield State Hospital and Medfield Foundation, working closely with T. X. Barber, before becoming the director of clinical services with Boston Psychological Associates.

Recognizing the lack of scientific underpinnings for so much of clinical psychology, he joined the Department of Psychology at Carleton in 1975, where he undertook an astonishing research career. Between 1975 and 1994, Nick wrote 183 journal articles, 19 chapters for various medical and psychological textbooks, and published two outstanding textsbooks: one with Barber and J. F. Chaves titled *Hypnosis, Imagination & Human Potentialities* (Pergamon, 1974), and was the senior editor, with Chaves, of the second, *Hypnosis: The Cognitive-Behavioral Perspective* (Prometheus, 1989).

He also contributed several articles to the SKEPTICAL INQUIRER over the years and has done as much as anyone to clarify the role of social factors and suggestion in cases of demonic and satanic possession, dissociative disorders, religious mania, glossolalia, past-lives regression, and alien abductions.

His most recent work was a brilliant paper showing the iatrogenic origin of so-called "multiple personality disorders" (MPD). At the time of his death Nick was also working on an edited volume dealing with the false memory syndrome. Had he lived he would have appeared on the Alien Abductions panel at CSICOP's Seattle Conference in June.

Life, as John F. Kennedy said years ago, is often unfair. The cause of truth has lost a major contributor; skeptics have lost a valuable friend.

—Robert A. Baker

back to the good old days and, among other things, reclaim Alaska from the U.S.

C. Eugene Emery, Jr.

Eugene Emery is a science reporter for the Providence *(R.I.)* Journal.

Qi Gong Martial Arts Win Lawsuit in China

In a defeat for skeptics of Qi Gong (or Chi gong), the idea in Chinese culture that "life energy" can produce physical effects outside the body, a critic in China has lost a defamation suit for his spirit of inquiry. The case involved supporters of famed Qi Gong Kung Fu master Hai Deng and reporter Jing Yongxiang in court proceedings lasting three and a half years. The *Sichuan Daily* reporter had first brought the Shaolin master fame with an interview and newspaper articles. Jing subsequently thought the media had inflated the story (seemingly reminiscent of Western news practices), and in 1988 wrote in "internal newspapers" (supposedly available only to officials) an exposé expressing doubts about Hai Deng "fever" and attributed talents. The public newspapers then took up that story with zeal, according to a *Far East Economic Review* article (February 10, 1994).

After Hai Deng's death, one of his followers brought a libel suit. In court the determining factor was whether Hai Deng's "two-fingered Zen handstand" was a fraud. It was disclosed that the only footage of the act was in a 1979 documentary, which showed that "safety ropes" were tied to the master's feet. The defense countered that these were a necessary precaution due to Hai Deng's being 70 years old and that some newspaper reports of the 1960s had portrayed the unadulterated performance (in turn, "tied" to the cultural revolution).

Both sides asked such questions as: Did Hai Deng really no longer need to sleep or eat after years of Qi Gong breathing exercises? Did he actually ever teach or study at the Shaolin Monastery? How did Qi Gong help him perform his feats? The judgment against Jing ordered him to pay the equivalent of U.S.$460 and print an apology. He is appealing the verdict, which is apparently against Propaganda Ministry regulations.

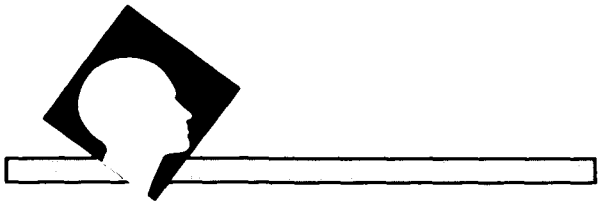
Critics maintain that Hai Deng's powers extended into the political field—he was a member of the Chinese People's Political Consultative Conference, for example—and left him legally privileged. Martial arts have long been part of Chinese nationalism and civil affairs. Others point to a later suit (assigned with the first) against Jing, for two public articles he wrote on the subject after the internal newspaper writings. His reason for writing them, despite having received threats, was that he felt strongly about the matter after the fallout from the affair.

Never before has a journalist been accountable for any writing inside government reports. One legal expert stated that the court avoided the delicate topic of whether the official press can be held to answer for its supposedly secret writings. A state martial arts researcher who questions Hai Deng's feats asks, "In the future, how will reporters dare to write exposés like this?" But the researcher also faults Jing for pumping up the affair to begin with.

—Tim Holmes

Tim Holmes writes from Fengyuan, Taiwan.

CSICOP News



Five Honored with CSICOP Awards

While it is true that one of CSICOP's primary roles is to provide critical examinations of paranormal and fringe-science research and reports, it may be less well known that CSICOP understands the importance of recognizing and honoring exceptional individuals and their efforts to educate and contribute to the public's understanding of science and the scientific method. At its 1994 Conference in Seattle, June 23-26, CSICOP presented awards to the following people:

Carl Sagan: The Isaac Asimov Award. This award was newly established to acknowledge our gratitude to Isaac Asimov for his extraordinary contributions to science and humanity. The award is in recognition of an individual who throughout his or her life has shown outstanding commitment and ability in communicating the achievements, methods, and issues of science to the public. When told that the award would be presented to Carl Sagan, Janet Asimov said, "There is no one better qualified for the CSICOP Isaac Asimov Award than his good friend and colleague Carl Sagan. Isaac was particularly fond of Carl. He was also in awe of Carl's genius, and proud that he was so adept at communicating science to the public through speaking, writing, and the visual media. Thank you again for remembering my beloved husband in this way."

Elizabeth Loftus: In Praise of Reason Award. Loftus is professor of psychology at the University of Washington and a leading researcher in the field of human memory and eyewitness testimony. She was presented the award in recognition of her distinguished contribution to the use of critical inquiry, scientific evidence, and reason in evaluating claims to knowledge.

Previous winners of this award are: Martin Gardner (1982), Sidney Hook (1984), Antony Flew (1985), Stephen Jay Gould (1986), Carl Sagan (1987), Douglas Hofstadter (1988), Cornelis de Jager (1990), Gerard Piel (1990), Donald Johanson (1991), and Richard Dawkins (1992).

John Maddox: Public Education in Science Award. Maddox is the editor of *Nature*, perhaps the world's most respected science magazine. He was presented this award in recognition of his distinguished contributions to the public's understanding of science and scientific principles.

Previous winners of the Public Education in Science Award are: Richard Berendzen (1990), Eugenie Scott (1991), and Sergei Kapitza (1992).

Philip J. Klass: Distinguished Skeptic Award. Klass is former senior editor of *Aviation Week and Space Technology.* He was presented this award in recognition of his unparalleled contributions to scientific and critical thinking in evaluating claims of extraterrestrial visitations.

Previous winners of the Distinguished Skeptic Award are: Henri Broch (1990), Susan Blackmore (1991), and Evry Schatzman (1992).

Jack Smith: Responsibility in Journalism Award. Smith is a columnist with the *Los Angeles Times.* He was presented this award in recognition of his outstanding contribution to fair and balanced reporting of paranormal claims.

Previous winners of the Responsibility in Journalism Award are: Davyd Yost (1984), Leon Jaroff (1984), Boyce Rensberger (1986), Ward Lucas (1986), Ed Busch (1987), Michael Willesee (1987), Lee Dembart (1987), Eugene Emery (1988), Milton Rosenberg (1988), Stephen Doig (1990), Keay Davidson (1991), Mark Curtis (1991), Andrew Skolnick (1992), and Henry Gordon (1992).

In past years CSICOP has given a "Frontiers of Science and Technology Award." Past winners of this award are: Paul MacCready (1986) and Murray Gell-Mann (1987).

—Barry Karr
CSICOP Executive Director

More news from the 1994 CSICOP Conference will appear in our next issue. —EDITOR

☐ *Frantzes Pledge $250,000, Name Skeptics' Library*

CSICOP's library in the new Center for Inquiry, Phase Two, will be named by two major contributors to our capital fund drive. Drs. John A. and Mary H. Frantz, of Monroe, Wisconsin, have been among the leading individual supporters of CSICOP's "Price of Reason" capital fund campaign. While attending the May 21 Center for Inquiry ground-breaking, the Frantzes made a new pledge, which brought their total support of the capital campaign to the $250,000 level. That level of giving entitled them to choose from a number of significant recognition opportunities. They have chosen to name the Center for Inquiry's Library of Skepticism and the Paranormal. The exact name of the library will soon be announced.

Recognitions are still available for naming the Phase II building (gift of $1,000,000) and the Computer Center (gift of $250,000), among other opportunities. ☐

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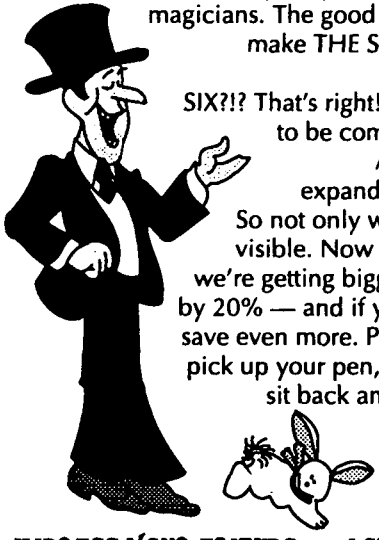

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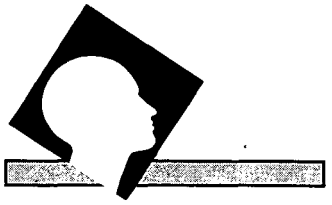

MARTIN GARDNER

The Tragedies of False Memories

The greatest scandal of the century in American psychiatry—the topic of my Summer 1993 column—is the growing mania among thousands of inept therapists, family counselors, and social workers for arousing false memories of childhood sexual abuse.

The accused are striking back, but grave injustices have been done.

No one denies that children are molested, but memories of events that never happened are easily fabricated in the minds of suggestible patients by techniques that include hypnotism, regression therapy, drugs, dream interpretation, and guided imagery. These fake memories become so vivid that patients who acquire them make enormously convincing court witnesses. Jurors tend to believe them rather than the expected denials of those accused. The result: an epidemic of wrong convictions and a mass hysteria that is now far more extensive than the old Salem witch-hunts.

Perhaps the tide is starting to turn. More and more judges, attorneys, police officers, media personnel, and ordinary citizens are becoming aware of the terrible injustices being done. Reputations are ruined, innocent adults are sent to prison for life, and some ten thousand once-happy families are ripped apart by the testimony of patients, mainly children and middle-aged women, who firmly believe their ersatz memories. On the bright side are recent court cases suggesting that innocent victims are finally starting to hit back. Higher courts are beginning to overturn convictions, an increasing number of victims are winning malpractice suits, and many children and adults are recanting their charges.

In Chicago last year, Steven Cook, in hypnotic trances induced by Michele Moul, a Philadelphia therapist, began recalling sexual attacks by Chicago's highly respected Cardinal Joseph Bernardin—memories Cook thought he had repressed for 17 years. It turned out that Moul's degree in psychology was from a school run by New Age guru John-Roger, who, according to *Time* (March 14, 1994), "claims to be the embodiment of a divine spirit."

On the sole basis of cooked-up memories, Cook sued the cardinal for $10 million. Fortunately, after a competent clinician convinced Cook his memories were confabulations, he recanted and dropped his civil suit. The vindicated cardinal was too kind to sue Moul for quackery.

All over the United States and

"Memories of events that never happened are easily fabricated in the minds of suggestible patients . . . by hypnotism, regression therapy, drugs, dream interpretation, and guided imagery."

Canada Protestant fundamentalists are convinced that Satan is on a final rampage preceding the Second Coming of Christ. Dozens of shabby books have been published about satanic rituals, in spite of a careful study by Kenneth Lanning, of the FBI's Behavioral Science Unit, that found no evidence that such ritual crimes take place. Stimulated by books on Satanism, and by talk shows on the topic, about 30 percent of false memories involved bizarre Satanic rituals, and it is claimed that in some of these the babies are killed and cannibalized.

If such cults existed there would be tens of thousands of bodies of mutilated babies buried around the land. Not one has been found. The *Salt Lake Tribune* (September 19, 1993) reported that a Utah task force spent $250,000 trying to find evidence of Satanic ritual abuse. It found nothing. How do fundamentalists explain this? Satan is so powerful, they argue, that he obliterates all evidence!

In June 1992, in Martensville, Canada, nine persons associated with a baby-sitting service were charged with ritual abuse on the basis of testimony by 30 young children. The accused included Ronald Sterling and his wife, Linda, their son Travis, an unnamed woman of 20, and five members of the local police department. The accusations began when a fundamentalist mother decided her two-year-old son had been ritually abused because he had a diaper rash. Constable Claudia Bryden, described by the press as "terribly paranoid" in her fear of Satanism, was chiefly responsible for the arrest of the "Martensville Nine."

The children first denied anything improper had happened, but, after scores of relentless grillings and coaxing by police and counseling by therapists, their "memories" slowly emerged. They spoke of being forced to drink blood and urine and to eat feces. A seven-year-old boy said one of the accused women cut off a child's nipple and swallowed it. Two boys each said that an axe handle had been shoved up his anus, and a vibrator, up his penis. No medical evidence for such acts was found.

A child testified he had seen people killed and acid poured on their faces. Another boy claimed he had been put nude in a cage suspended by a rope. He accused Linda Sterling of threatening him with a knife until he sucked her breasts. On another occasion he recalled her saying, "If you don't pee in my mouth I'll kill you." Both Ron Sterling and his son were accused of sodomy.

Seven of the nine were eventually acquitted, their reputations forever scarred. Travis Sterling was sentenced to five years, and the young woman to two years. Some of the acquitted are considering lawsuits of up to $200 million. Mothers of the children remain firmly convinced that the town is infested with secret Satanist cults. (Source: "The Martensville Horror," by David Roberts, in Toronto's *Globe and Mail*, February 19, 1994.)

Harold Joseph Levy, 52, a respected attorney and editorial writer on the *Toronto Star*, was arrested in May

1993. A woman undergoing therapy had long-repressed memories aroused of being sexually molested by Levy. A year later, persuaded that her memories were false, she recanted. As the *Toronto Globe and Mail* put it (April 30, 1994), this ended a year of "professional humiliation, social repudiation, and searing gossip." Incredibly, the Crown's attorney, Christine McGoey, said she withdrew her charges "reluctantly." Said Levy's lawyer, "I am completely flabbergasted at the use of the word 'reluctantly.' There was never a shred of evidence. The Crown should be ashamed" (*Toronto Sun*, April 30, 1994).

In 1989, Holly Ramona was suffering from bulimia. Marche Isabella, a family counselor, told her that 80 percent of bulimia cases arise from repressed memories of child abuse—a preposterous claim. There is no such connection. After months of therapy with Isabella, Holly began having flashbacks of repeated rapes by her father, Gary, when she was a small child. After Richard Rose, a psychiatrist, gave her sodium amytal, lurid details of these molestations began to take shape in her mind. Because of her daughter's charges, Gary's wife divorced him and he was fired from his job as vice president of a California winery.

Infuriated by what he called therapeutic quackery, Gary Ramona sued the two therapists for $8 million in damages. Last May a grand jury in Napa County, California, issued a ground-breaking verdict. Ramona was awarded half a million dollars.

Lenore Terr, a San Francisco child psychiatrist, was a chief witness for the defense of the two therapists. A tireless defender of repressed memory therapy, Terr has this year published a book titled *Unchained Memories: True Stories of Traumatic Memories, Lost and Found* (Basic Books). Terr told the jury that Holly's memories were corroborated by her dislike of teeth that resembled her father's and by her aversion to pickles and bananas because they reminded her of oral sex. However, under questioning, Terr admitted that Holly's "memory" of being forced by her father to perform oral sex on the family dog was "dubious." (Sources: "Dubious Memrories," by Jill Smolowe, *Time*, May 23, 1994, and Jane Gross's article in the *New York Times*, April 8, 1994.)

Terr was also an expert witness for the prosecution of George Thomas Franklin, a former California firefighter now in prison for life on the sole testimony of his daughter Eileen. She said she "adored" her father until 1989, when therapy revived a 20-year-old memory of having seen him murder her best friend, eight-year-old Susan Nason. It had been an unsolved crime, and the details were long familiar to Eileen.

In 1989, Eileen "remembered" her father hitting Susan on the head with a rock after raping her. She also had revived memories of herself being sexually molested by her father, and on one occasion being held down by her father while one of his friends raped her. In 1990 the California Court of Appeals upheld Franklin's life sentence. Terr firmly believes Eileen's long-repressed memories. On CNN's "Sonya Live" (March 13, 1994), I heard Terr say that one-sixth of all women have been sexually abused as children and that the cases of revived memories' proving false are only a "drop in the bucket" compared with revived memories that are true.

Dale Anthony Akiki, 35, mentally retarded and physically deformed, spent two and a half years in jail after ten children (ages 3 and 4) in San Diego accused him of sexually abusing them in satanic rituals at Faith Chapel, where he taught Sunday School. The

Case Study of Implanted Memory

The following dialogue is from Daniel Goleman's article "Studies Reflect Suggestibility of Very Young as Witnesses," in the *New York Times* (June 11, 1993). It is an excerpt from 11 interviews of a four-year-old boy, who each week was told falsely: "You went to the hospital because your finger got caught in a mousetrap. Did this ever happen to you?"

First Interview: "No. I've never been to the hospital."
Second Interview: "Yes. I cried."
Third Interview: "Yes. My mom went to the hospital with me."
Fourth Interview: "Yes. I remember. It felt like a cut."
Fifth Interview: "Yes." [Pointing to index finger. . . .]

. . .

Eleventh Interview: "Uh huh. My daddy, mommy, and my brother [took me to the hospital] in our van. . . . The hospital gave me . . . a little bandage, and it was right here. [Pointing to index finger.]

The interviewer then asked: "How did it happen?"

"I was looking and then I didn't see what I was doing and it [finger] got in there somehow. . . . The mousetrap was in our house because there's a mouse in our house. . . . The mousetrap is down in the basement next to the firewood. . . . I was playing a game called 'Operation' and then I went downstairs and said to Dad, 'I want to eat lunch' and then it got stuck in the mousetrap. . . . My daddy was down in the basement collecting firewood. . . . [My brother] pushed me into the mousetrap. . . . It happened yesterday. The mouse was in my house yesterday. I caught my finger in it yesterday. I went to the hospital yesterday."

children had been pressured to fantasize by parents and therapists. Akiki was accused of hanging them upside down from a chandelier, sodomizing them with a curling iron, dunking them in toilets, forcing them to drink blood and urine and ingest feces, mutilating animals and a human baby, and bringing an elephant and a giraffe to Sunday school class, where he killed them.

Akiki was acquitted in November 1993 by a San Diego grand jury. Terr testified for the prosecution, insisting that only clinicians, not research psychologists and psychiatrists, are capable of judging the validity of repressed memory theory. In June 1994 the jury lambasted the therapists for their techniques. Akiki's attorneys are bringing a civil suit of $110 million against the San Diego county. (Source: *New York Times*, June 3, 1994.)

In Hendersonville, N.C., where I live, a gullible jury convicted Michael Parker in 1993 of ritually abusing his three young children. Their memories had been revived by therapists at the insistence of their mother, who had been impressed by a book about Satanism. As usual, the children's memories were as bizarre as they were unsubstantiated. Not only Parker, but his mother and seven others were accused of Satanic cult abuse. The

children testified to being surrounded by the accused, who were wearing Ku Klux Klan-type robes with emblems on the sleeves, holding burning candles, and chanting. One little girl recalled her father raping her with a big spoon. It became filled with blood, which he poured into a cup and drank.

Divorced and living alone in a trailer camp in the nearby town of Saluda, Parker was too poor to hire a lawyer. "Sodom and Saluda" was what Mike Edwards, the prosecuting attorney, called the town. (Saludians were of course furious.) He quoted frequently from the Bible while jurors smiled and one man murmured "Amen." It took them only 55 minutes to find Parker guilty. He is now in prison, eligible for parole in 160 years. Michael Edney, his court-appointed attorney, plans to appeal.

One of Parker's daughters, who had been in a mental hospital, said Parker had forced her to lie on the ground, her arms and legs pinned down by horseshoes, while he molested her. She told the jury of a time when a poster on her bedroom wall, advertising the "I Love Lucy" show, talked to her and said she deserved all her suffering. None of the children had told anyone about their abuse until undergoing therapy.

In spite of the FBI's report that satanic cults are a myth fabricated by fundamentalists and Pentecostals, the prosecuting attorney says they are widespread in North Carolina. "My experience is when you uncover the evidence of Satanism you get dribs and drabs," he said. "It's a fraternity that has a code of silence like no other. We've got a peek at what it looks like." To escape prison, Parker's mother accepted a plea bargain and pleaded "no contest." Trials of the other seven are coming up soon. (Source: Hendersonville's *Times-News* from February 13, 1993, through February 5, 1994.)

A few earlier cases, out of thousands, deserve mention. The McMartin Preschool case in Manhattan Beach, California, ended in 1990 without convictions of the school's director and her son. They had been accused of hundreds of episodes of rape, oral and anal intercourse, and unspeakable acts involving satanic mutilations of animals—all solely on the basis of memories planted in the minds of suggestible children by honest but quack psychologists. It was the longest (six and a half years) and costliest criminal trial in U.S. history. The accusations had been triggered by a mother who was later hospitalized for acute paranoid schizophrenia. For details see *The Abuse of Innocence: The McMartin Preschool Trial*, by Paul and Shirley Eberle (Prometheus Books, 1993).

In 1993 a New Jersey Court of Appeals overturned the 47-year sentence of Margaret Kelly Michaels for abusing 19 children at the Wee Care preschool, in Maplewood, N.J. An Essex County prosecutor spent almost $3 million of taxpayer money in his zeal to convict Michaels solely on the basis of testimony by children who had been undergoing dubious therapy. They testified that Michaels could toss cars into trees and that she liked to cover her nude body with peanut butter and make them lick it off. They added the charge, so often repeated in books on satanic cults, that they were forced to ingest feces and urine. They said Michaels had pushed Leggo toys into their vaginas and rectums. Michaels spent five years in jail before her acquittal. Incredibly, the state is appealing.

Laura Pasley, 39, a secretary in the Dallas Police Department, sought therapy for her bulimia and was told that all eating disorders spring from repressed memories of child sex abuse. Using hypnosis and dream analysis,

"In Edenton, North Carolina, . . . on no basis except preposterous claims by children . . . Robert Kelly, owner of [Little Rascals day-care center], was convicted on 99 counts of first-degree sex offenses. He is currently serving 12 consecutive life sentences."

her therapist soon persuaded her that she had been abused by her mother, father, and grandfather, and a neighbor, and that her brother once tried to kill her. She "remembered" sex abuse by animals. In 1992 she decided that all these aroused memories were false, and sued both her counselor and therapist. The case was settled out of court.

"These therapists are doing something as evil as evil can be," Paisley told a reporter. She said that when she tried to tell her therapist that certain horrible events had not happened, he shook his head, insisting she was "in denial" and only trying to protect her family. (Source: Pasley's article, "Misplaced Trust," in *True Stories of False Memories*, edited by Eleanor Goldstein and Kevin Farmer [SIRS Books, 1993].)

The most tragic and still ongoing case of fabricated memories involves the Little Rascals day-care center in Edenton, North Carolina, a town torn apart by the case. On no basis except preposterous claims by children, egged on by angry, mind-closed mothers, and memories evoked by therapists, Robert Kelly, owner of the school, was convicted on 99 counts of first-degree sex offenses. He is currently serving a sentence of 12 consecutive life terms, the longest sentence in North Carolina history. He can apply for parole in 240 years. Early this year his wife, Betsey, pleaded "no contest," which allowed her a reduced sentence on 48 counts. She is serving seven years in prison.

Willard Scott Privott, a video-store owner associated with the Little Rascals case, spent almost four years in jail awaiting trial because he could not raise a $1-million bond. At his May 1994 trial, he escaped a possible 363 years in prison by accepting a plea bargain, and was released on a suspended ten-year sentence. He had been accused of sex acts with Betsey in front of the children, as well as sex acts with the children, while photos were taken. No such photos were found. Three other defendants still await trials, and have been offered plea bargains.

All those charged maintain total innocence. When the children were first interviewed by therapists they had no memories of sex abuse, but after prolonged therapy, and hundreds of leading questions, memories of abuse began to emerge. Some notion of the accuracy of these "memories" can be gained by one child's recalling that "Mr. Bob" had taken a group of children aboard a ship surrounded by sharks. He threw one of the girls in the ocean. Was she eaten by sharks? No, the boy replied. He had jumped into the water and rescued her!

Children recalled seeing Mr. Bob kill babies with a pistol and take photos of employees engaging in sex. They testified to sodomy by Mr. Bob, and said he routinely shot children into

outer space on rocket ships. To this day the children, now young adults, swear their revived memories are genuine. "We know. We were there," they have said many times on TV talk-shows. One can only marvel at the intensity with which the prosecuting attorneys continue to pursue the case. Could it be that winning a court victory overrides their consciences?

The cases described only scratch the surface of nightmares that are splintering families all over the U.S. and Canada and sending innocent adults to prison for life. During the past dozen years, hundreds of preschool teachers have been arrested on the basis of repressed-memory therapy. Leading psychiatrists seem powerless to combat the epidemic. The same techniques used to awaken long-repressed memories of sex abuse are also being used by scores of therapists to revive memories of abductions by aliens in UFOs, as well as memories of traumas experienced in previous incarnations!

John Mack, a Harvard psychiatrist, has just published *Abductions: Human Encounters with Aliens* (Scribner's), a book about his successes in using hypnosis to uncover memories of sex abuse on flying saucers. Mack believes the aliens live in dimensions invisible to us. See his 1994 interviews in *The New York Times Magazine* (March 20), *Time* (April 25), and *Psychology Today* (March/April).

Readers interested in up-to-date information about this mania can contact the False Memory Syndrome Foundation, 3401 Market Street, Philadelphia, PA 19104, which publishes a newsletter. Books on both sides of the bitter controversy are proliferating. Of special interest is Lawrence Wright's *Remembering Satan: A Case of Recovered Memory and the Shattering of an American Family* (Knopf). The book reprints his explosive two-part *New Yorker* article (May 17 and 24, 1993), about the conviction of a pious policeman in Olympia, Washington, on the basis of "recovered" memories of his two daughters. Because I discussed this tragic case, which involved an alleged Satanic cult, in my previous column on false memories, I won't repeat its crazy details here. It is a book every American should read. Someday you may be called for jury duty on a repressed-memory case that can result in terrible injustice unless you and your fellow jurors are adequately informed.

By far the best, most detailed, most accurate, most compassionate history of this tragic witch-hunt is *Victims of Memory*, by Mark Pendergrast, scheduled for publication this fall by Upper Access Books. If the book is hard to come by, you can order it through the toll-free number 800-356-9315. □

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Progress Report on the . . .

HEADQUARTERS CAMPUS FOR CSICOP AND THE SKEPTICAL INQUIRER

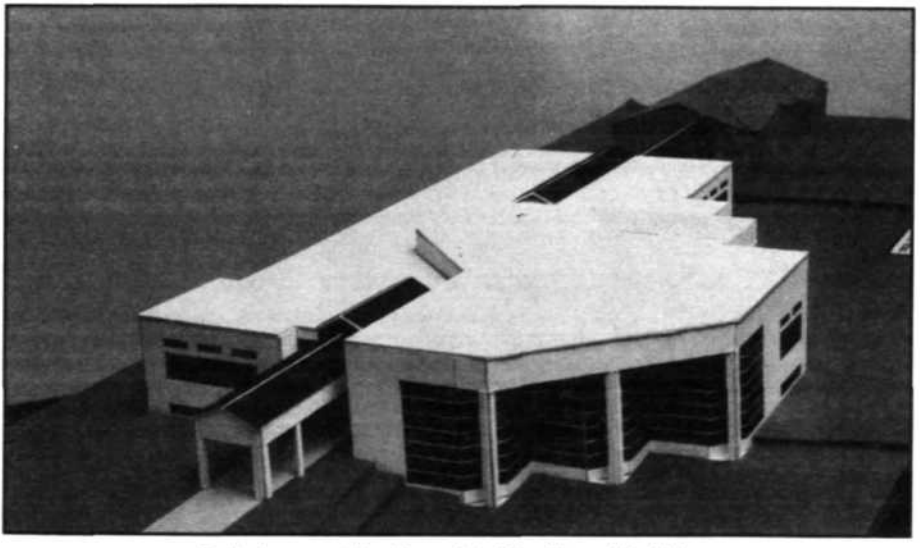
Taking advantage of low-interest rates and a soft construction market, we have begun construction of the Center for Inquiry, Phase II. The Center for Inquiry is the headquarters of the Committee for the Scientific Investigation of Claims of the Paranormal and the Council for Democratic and Secular Humanism (CODESH), with which for economic reasons CSICOP has shared facilities since 1980.

This is the long-awaited consolidation of SKEPTICAL INQUIRER's Buffalo-area administrative, editorial, production, and warehousing activities in one efficient facility.

Ground-breaking was in late May 1994, and the plan is for occupancy in early 1995.

Located adjacent to the Amherst Campus of the State University of New York at Buffalo—the largest campus of the nation's largest state university system—the Center for Inquiry will provide the permanent, multi-purpose home base that the skeptical movement has long required.

Numerous opportunities exist for naming rooms and structures after friends or loved ones. The Phase II building of the Center for Inquiry itself still remains to be named for a gift of $1,000,000; the Computer Center, for a gift of $250,000.



Preliminary architect's model of the Phase II building.

Construction Now Under Way!

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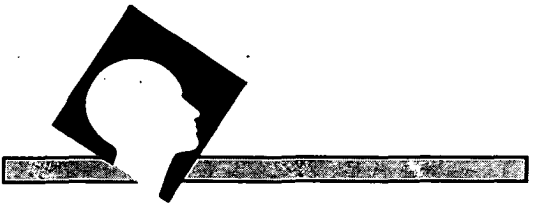
Construction Cash Is Still Short

We will realize important savings by having started construction this summer, although our "Price of Reason" Capital Fund Drive is still in progress. Under Co-Chair Martin Gardner this campaign has reached more than 80 percent of the CSICOP/CODESH construction and endowment goals. To maintain our momentum, additional cash gifts for construction are urgently needed.

Martin Gardner

Please support the "Price of Reason" Capital Fund Drive today. For more information, use the postpaid response card in this issue or contact CSICOP today at 716-636-1425.

Psychic Vibrations



Satanic Paranoia in Texas, Psychics Among the Stars

ROBERT SHEAFFER

The more that becomes known about the great Satanist conspiracy in our midst, the easier it becomes to understand why the crimes go generally unnoticed and unpunished. An article in the April 1994 *Texas Monthly* reveals much about the Satanist modus operandi, as uncovered by vigilant therapists in the Austin area. "They have infiltrated the legal, medical, and law enforcement professions with their agents," reported therapist Karen Hutchins. "The male agents tend to end up in the criminal justice system and the females in state hospitals." She belongs to the Travis County Society for the Investigation, Treatment, and Prevention of Ritual and Cult Abuse, which is part of a statewide organization headed by Dallas psychologist Randy Noblitt, who was paid $140 an hour to testify for the prosecution at a trial of alleged Satanists.

They warn that the Satanists have learned how to induce multiple personality disorders (MPDs) in their victims, creating alternate personalities ("alters"), which can be invoked by the proper signal. These alters behave like mental robots and have been strategically placed to sabotage American institutions, as well as to recapture cult escapees or whatever else the Satan worshippers require. Sometimes an alter can even be activated as a potentially damaging witness in the courtroom; a simple hand signal from the satanic master sitting in the docket, and the cult victim switches from his normal personality to one that will testify: "I saw nothing." According to Hutchins, it is not uncommon for the eye color of an alter to be different from that of its host. Scars obtained during one personality's tenure may be missing when another takes over, Hutchins claims, and during therapy, burns or scars—actually "body memories"—may suddenly appear, like the rash in the form of Satan's tail in *Michelle Remembers*. Some therapists have even reported manifestations of "alters" that are actually animals. When these take over, the subjects may lie on the floor and growl.

Utah psychologist Cory Hammond paints a dazzling scenario of mind control involving the CIA, former Nazi scientists, and a sinister, mysterious "Dr. Greenbaum," who saved himself from the Nazi death camps by giving the Nazis the secrets of the Cabala. (In Orwell's novel *1984*, the villain made up by Big Brother to take the blame for everything is named Goldstein.) According to Hammond, patients being treated for multiple personality disorder all across the United States have spontaneously and independently mentioned "Greenbaum," who apparently was dumb enough to use his real name while

performing his abominable acts. Why do the alleged victims of horrendous satanic abuse typically display no physical scars? Hammond explains that when the personality switches from one alter to the next, the scars change with it, instantly hiding all physical evidence.

And on the basis of the well-rehearsed testimony of several children, bolstered by expert testimony from Noblitt, onetime day-care providers Fran and Dan Keller were sentenced to 48 years in prison. Among the crimes imputed to them by children were cutting up people with chainsaws and then putting their skins into the children's socks; turning the day-care into a working child brothel; kidnapping a gorilla from a nonexistent zoo; and flying the children on jets into Mexico for further abuse, always being careful to bring them back in time to be picked up by an unsuspecting parent. It would seem that being a "day-care provider" today ranks right up there with "bomb squad" and "test pilot" on the occupational-risk scale and may have to be paid accordingly.

Confirming these allegations of government mind-control is Colin Ross, M.D., President of the International Society for the Study of Multiple Personality and Dissociation. Ross was the subject of the CBC program "The Fifth Estate," last November 9, which detailed how he has uncovered a U.S. government plot going all the way back to the 1940s. Now, of course, it's under the control of the CIA. Victims are taken to special training centers where alternate personalities are created using sensory deprivation, flotation tanks, hypnosis, virtual-reality goggles, hallucinogenic drugs, and so on. "It appears that Sirhan Sirhan, who shot Robert Kennedy, was mind-controlled," Ross has written, "and this raises the question of whether Lee Harvey Oswald was" as well. Because Ross is starting to reveal all this, he's convinced the agents of the CIA are working to discredit him and the MPD movement, something it would appear Ross is accomplishing admirably entirely on his own.

* * *

There're big psychic goings-on in the Land of the Stars. *New York Post* columnist Neal Travis reported March 30 that Shirley MacLaine had gone even further out on a limb with a prediction that the Big One was coming the weekend of March 25-27. "I heard that maybe 70 percent of the stars left town for the weekend," said an unnamed Beverly Hills resident quoted by Travis. One who supposedly did get out of town was Dolly Parton, who was said to have advised her staff to do likewise. At last report, Hollywood was still standing.

And the *National Enquirer* reported in its May 4 issue that the on-again, off-again divorce action by Roseanne Arnold against her husband Tom went to "on" when Roseanne's suspicions were confirmed by a psychic on April 13. For some time she had been hearing rumors that her husband was having an affair with his young assistant. She didn't believe those accounts, though, until they were confirmed by the psychic! The *Enquirer* reports that "the seer even gave Roseanne the name of Tom's lover"—Kim. "I decided then and there to divorce Tom and fire him and Kim," Roseanne allegedly said. This could only have impressed someone who was unaware that stories about Roseanne, Tom, and Kim had been plastered all over the tabloids a few months before. However, since Roseanne claims to have multiple personalities, it is possible that the "alter" visiting the psychic had been dormant for a few months and didn't have a chance to read the earlier headlines.

* * *

As reported in the Summer 1994 *SI*, the photograph that launched one of the greatest paranormal mysteries of our time, the Loch Ness monster, has been revealed as a hoax. But even as Nessie seems to be fading into the sunset, surely other crypto-creatures will boldly step forth to take its place. Just this past May, a "snorting" 20-foot-long sea monster with two humps was sighted off the coast of British Columbia by two university students. The monster was promptly identified by Ed Bousfield, a research associate with the British Columbia Museum, as a *cadborosaurus*, among the last of the living dinosaurs, named from its early sightings in Cadboro Bay. He explains that, because of "incredibly bad luck," no cadborosaurus has ever been captured, or even photographed clearly. "All these people say the same thing about the animals, so there's got to be something there." □

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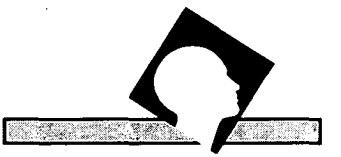
FROM ED MCMAHON ABOUT WINNING THEIR GRAND PRIZE.

SPECIAL REPORT

Miracles or Mania?

JOE NICKELL

Skeptics call it "miracle mania," and even the Catholic church is alarmed by some of the trends toward what it views as spurious revelations and magical claims: weeping statues, proliferating apparitions of the Blessed Virgin, "miracle" photographs, and other alleged phenomena, including visitations of angels.



Even the Catholic church is alarmed by some of the trends toward what it views as spurious revelations and magical claims. The modern miracle claims are fundamentally like the fashionable occult ones.

Animated Icons

In 1981, in Thornton, California, for example, it was claimed that a statue of the Virgin Mary not only wept but moved her eyes, shifted her head and hands, and performed other apparent miracles—even strolled about the church at night! Pilgrims thronging to the church added significant revenues to its coffers.

Alas, a commission appointed by the diocesan bishop concluded that the claims were probably the result of a hoax. The "tears" had been suspiciously "oily"; the movements of the Madonna's head and hands were nothing more than a result of variation in photographic angles; and two photos that showed Christ in the background were proved fakes. The statue's perambulations—which occurred only at night and were never witnessed—were attributable to pious trickery as well.

Despite the official church's skepticism of such events, reports of weeping and even bleeding statues and icons continue to occur along with effigies that allegedly exude fragrances, produce "auras," and even yield palpable heartbeats. Of course none of these has been scientifically verified, and few have been made available for scrutiny.

"Despite the official church's skepticism . . . , reports of weeping and even bleeding statues and icons continue to occur."

Marian Apparitions

Another manifestation of miracle mania is the boom in reported apparitions of the Virgin Mary, such as those at Medjugorje, Yugoslavia. Over the course of a decade, beginning in 1981, an estimated 19 million pilgrims from around the world visited this mountain village to see the six children who claimed to be in daily contact with the Virgin.

The bishop soon branded the affair a hoax, and Yugoslavia's national bishop's conference warned against any public worship that was linked to the apparitions. Nevertheless, pilgrims continued to throng to Medjugorje until civil war came to the region.

Soon the "Medjugorje virus" had spread to other countries, including the United States. Marian visitations were claimed at Lubbock, Texas (1988); Marlboro Township, New Jersey (1989); Conyers, Georgia (1990); a shrine near Denver, Colorado (1991); and Cold Spring, Kentucky (1992).

Assorted "Miracles"

As at Medjugorje, there were reports of "sun miracles" and of rosaries that turned to gold, but such phenomena cannot be called miraculous. Astronomers can verify that the sun has not undergone any of the described gyrations. Those are readily explained by a variety of optical effects: The eyes' inability to focus on such a bright object can create a "pulsating" effect, or their being darted to and fro to avoid fixed gazing can create an illusion of the sun "dancing."

Some obtain sun miracles in the form of Polaroid snapshots, depicting what appears to be a golden doorway flooded with radiance. However, these photographs—while visually striking—simply depict the camera's own lens aperture.

As to the alleged transmutation of rosaries from silver to gold, in cases where these have been properly examined the claims have not been substantiated. In some instances, a thin silver coating had simply worn off, revealing copper underneath and thus creating the illusion.

Some of the most dramatic claims are those of supernatural healings. The alleged visionary at Marlboro Township, for example, claimed that the Virgin began appearing to him after he was miraculously healed of an old back injury and hearing loss at Medjugorje.

Such claims, however, are almost impossible to verify. There is the difficulty not only of accurately measuring and comparing changes in condition but also of assessing the effects of an emotional experience (which can provide an overwhelming sense of well-being and, at least temporarily, remove pain completely). Some apparent healings may be attributed simply to previous misdiagnosis, while others may result from "spontaneous remission" (known to occur with certain ailments, including some types of cancer).

Protestants Too

In the wake of Medjugorje fervor, *Newsweek* reported that "in the United States, Mary has become a Catholic version of the Pentecostal Protestant's

speaking in tongues." Not surprisingly, the Pentecostals (who seek to be filled with the Holy Spirit, like Jesus' disciples at Pentecost) are themselves enjoying an increase in strength in North America, England, and Latin America. Their attraction? As one adherent explains: "We all long for the assurances of God's reality in our lives. Rational theologies do not seem to satisfy us, and we look for the ecstasies that are described by the mystics."

The "Angel Business"

A current rash of miracle claims comes from people who insist they have received help from their personal guardian angels. Books filled with such accounts have recently multiplied.

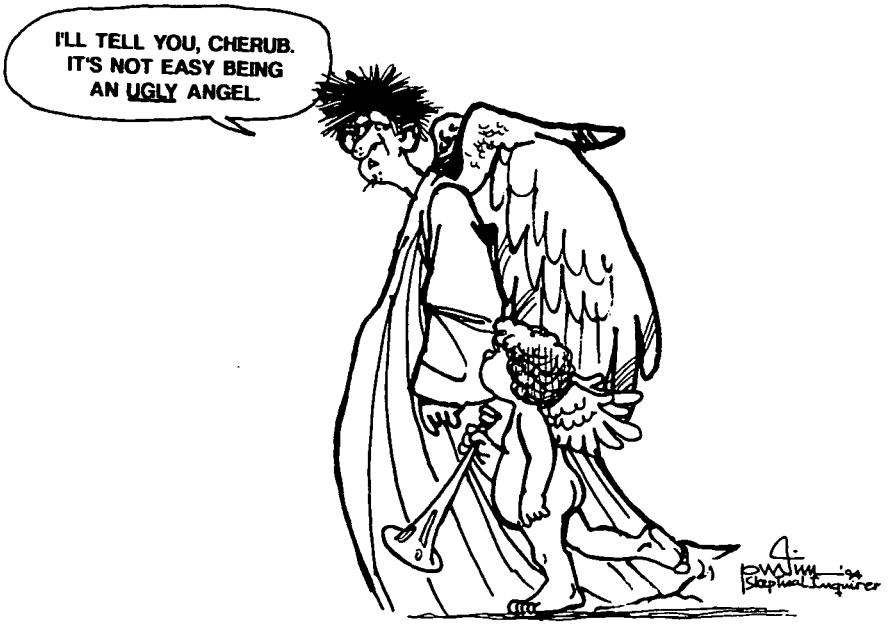
Many of the accounts are anonymous, and thus are on a par with urban legends, while others are, at best, anecdotal accounts—no more credible than Elvis Presley sightings or testimonials of UFO abductions.

"Some apparent healing may be attributed simply to previous misdiagnosis, while others may result from 'spontaneous remission.' "

Nevertheless, angels are everywhere good for business. In addition to the rash of books on the subject, there are angel conferences and angel organizations. There are even self-styled "angelologists," who claim they can actually see one's guardian angel and divine its name—much like the claims of nineteenth-century spiritualists that they could identify people's "spirit guides."

The Downside

It is popularly believed that the current trend toward magical thinking does no harm and yields great bene-



fits. Yet anxious Protestant and Catholic clergy—including a reportedly "alarmed" Pope John Paul II—fear that the trend toward self-styled visionaries and private revelatory experiences could detract from the credibility of established religion.

Rationalist thinkers are also concerned, seeing the proliferating miracle claims in the larger context of "paranormal" beliefs—uncritical acceptance of astrology, as well as other types of fortune-telling; "crystal healing"; conjuring of spirits; and other superstitious, pseudoscientific, even antiscientific pursuits. From this point of view, the modern miracle claims and the fashionable occult ones are fundamentally alike, and both may encourage other irrational practices.

In addition to such general concerns, there are specific ills that may occur as a result of superstitious practices, including serious physical harm. For example, at the shrine near Denver, dozens of the faithful in search of a sun miracle suffered retinal damage, including one woman who came to pray for her crippled child.

Even more serious is what can happen at faith-healing services, such as a "Miracle Service" held by the late Kathryn Kuhlman. At the evangelist's insistence that "someone" was being healed of cancer, a woman got out of her wheelchair, took off her back brace, and ran back and forth across the stage. The audience thundered its approval. Unknown to them, however, the woman's cancer-weakened vertebrae collapsed due to the strain placed on it, and the woman died painfully two months later.

It is ironic that—at a time when science has achieved great successes in medicine, space exploration, communication technology, and other areas—there should be such an attraction to beliefs and practices that hark back to the Middle Ages. True, science cannot provide the wonders offered by the miracle mongers, but then neither, apparently, can they.

Joe Nickell's latest book is Looking for a Miracle.

A REMINDER . . .

All *editorial* correspondence (manuscripts, letters to the editor, books for review, authors' queries) should be addressed to the Editor's office in Albuquerque (note new address):

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Empirical Evidence for Reincarnation?

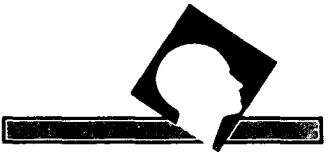
Examining Stevenson's 'Most Impressive' Case

LEONARD ANGEL

One of the most influential sources of empirical evidence for reincarnation is *Twenty Cases Suggestive of Reincarnation,* by Ian Stevenson (1974). In recent years, my students in various philosophy of religion classes have reminded me of just how influential it has been. Their papers on the afterlife routinely quote authors persuaded by this book that reincarnation or some other paranormal hypothesis is the only plausible explanation of Stevenson's data.

For example, Linda Badham and Paul Badham (1987: 262-263) are struck by "the sheer thoroughness of Stevenson's methods.... Every witness was subjected to rigorous questioning, careful notes were taken of what was said, and these were checked against a second inquiry some years later. . . . It is just not plausible to write Stevenson off as being so keen to convince us of the truth of reincarnation that he misrepresents matters to fit his case. . . . He does not try to make weak cases out to be stronger than the evidence warrants." The results, according to the Badhams, are significant. "Stevenson presents a strong case . . . for saying that at least some claimed 'memories of a former life' appear to be evidential for and suggestive of some theory of reincarnation or possession" (p. 269).

Guy Lyon Playfair (1976:165) states that "a study of [the Imad Elawar] case does not seem to lead to any probable explanation other than that of reincarnation." Robert Almeder (1990: 50) concludes that "there is good reason to suppose



Ian Stevenson's conduct of the Imad Elawar investigation, considered among the strongest of his cases, fails on six fundamental grounds.

that the hypothesis of reincarnation is the best explanation of the cases documented by Stevenson." Sylvia Fraser (1992), like Playfair, specifically cites the Imad Elawar case, and endorses Playfair's conclusion. Gunapala Dharmasiri (1989: 41) states that Stevenson "objectively verified [the] claims, and found them true." And there are others in a similar vein.

Oddly enough, despite the length of time since publication of *Twenty Cases*, it is hard to come by detailed examinations of it. Those who endorse Stevenson's work state that they have been persuaded, but do not say more than that. And skeptics tend to dismiss the work without detailed explanation. For example, Paul Kurtz's compendious *Transcendental Temptation* has a subsection "Reincarnation: Past Lives" (Kurtz 1986: 411-414), but there is only the briefest mention of Stevenson's data.

Paul Edwards (1987) has presented general arguments to support the view that the reincarnation hypothesis must be held to be highly improbable. But this seems to sidestep the issue of the specific content of the evidence. This, in effect, is Almeder's (1990:48) rejoinder to Edwards: "Edwards's charge that all this is just too incredible for any rational person to believe is simply a blatant bit of question-begging." John Beloff (1985: 361) makes a similar point. Ian Wilson (1981, 1987) criticizes Stevenson for being too light on the fraud issue. But most reviewers of these materials hold that outright deliberate deception on the part of enough of the participants to warrant dismissing the data is highly unlikely.

Edwards quotes Chari's dismissal of many of the cases as cultural fabrications. But Chari is not the right person to rely on in dismissing the Stevenson cases, for Chari (1978: 315) is persuaded that a combination of naturalistic *and* paranormal phenomena is indicated by the strongest data. Sarah Thomason (1987) critically scrutinizes later work of Stevenson based on language competences, but not the *Twenty Cases* materials. How difficult is it, then, to account for the specific content of the best of the *Twenty Cases* material on purely naturalistic hypotheses?

It seems important, however belated, to undertake a thorough critical examination of the *Twenty Cases* methods and materials. I propose to begin this task. Further, I suggest that it is possible in a relatively short space to establish the presumptive unreliability of Stevenson's *Twenty Cases* work in general, due to gross failures in his methods of research, write-up of data, and analysis of hypotheses.

Which case shall we review? The Imad Elawar case leaps out at us as especially significant. Stevenson (1974: 371) includes it among his strongest cases. Further, in this case alone among the 20, Stevenson himself recorded the prior-to-verification memories, was present at the initial meetings between the boy who had the past-life memories and the surviving family members of the apparent past life, and conducted the verifications of the memories. "The most impressive in this respect is the case of a Lebanese boy called Imad, for in this case, Stevenson arrived before anyone had tried to verify any of his alleged memories" (Badham and Badham 1987: 261). And, as we've seen, it is singled out by several for special mention as a convincing case. It is perfect for our review.

I'll now try to show that Stevenson's conduct of the Imad Elawar investigation fails on six fundamental points.

1. In a proper investigation of spontaneous past-life memories of a

child, first and foremost is the need to record and report the "original, prior-to-verification memories" in the form in which they were originally noted. Stevenson presents the original information he received concerning the boy's memories, according to the parents, as follows:

> They believed that he was claiming to have been one Mahmoud Bouhamzy of Khriby who had a wife called Jamilah and who had been fatally injured by a truck after a quarrel with its driver. (p. 277)

Stevenson later tabulates 57 items as constituting the original prior-to-verification memories. But the form in which they were originally recorded is not given. Inspection of the items of the tabulation makes clear the need for a record of just what the parents said, how Stevenson recorded their data prior to verification, and how it was or was not subsequently reorganized for presentation in tabular form. Amazingly enough, the boy's memories are in the end held to be good evidence for reincarnation in spite of the fact that the best past-life candidate Stevenson found was not named Mahmoud Bouhamzy, did not have a wife named Jamilah, and did not die as a result of an accident at all, let alone one that followed a quarrel with the driver. Yet Stevenson does not give sufficient information for the reader to know what exactly the parents or the boy himself said that entitled Stevenson to discount the

original claims as interpreted by the parents and instead present the very different claims given in the tabulation.

2. Any attempts on the part of the investigator to distinguish between what the boy stated and what the informant relatives of the boy interpreted him as stating must be done before efforts at verification. Now consider Stevenson's write-up of the name "Mahmoud" in the tabulation:

> 2. Mahmoud (name mentioned by Imad). (p. 287)

Under Stevenson's "Comments" we find "Mahmoud Bouhamzy was an uncle of Ibrahim Bouhamzy." (Ibrahim Bouhamzy is the apparent past-life of the boy, according to Stevenson.) Thus it is taken as verified that a name the boy mentioned corresponded to a real person in the past-life's family, as though it is clear that the boy had been mentioning a name by way of referring to that uncle.

What is not mentioned in the tabulation of data is that the original information given by the parents of the boy was that they took their son to be claiming to have been Mahmoud Bouhamzy of Khriby. Presumably Stevenson doesn't mention this in the tabulation because he came to the conclusion that the parents had misunderstood the boy, or drew unwarranted conclusions from what the boy had said. But *when* did he come to that conclusion, and on what basis? There is clear evidence that Stevenson came to that conclusion only after traveling to Khriby with the expectation that the past-life was named "Mahmoud Bouhamzy" and had died as a result of an accident. Stevenson refers to his discovery (in Khriby) that the Mahmoud Bouhamzy who had lived in Khriby was not killed as a result of an accident with a truck as a complication for interpretation of the data and as "baffling" (p. 280). Thus it is clear that Stevenson's formulation of the data to be verified followed the effort to verify and was not fixed prior to verification.

Examples of this sort of problem abound. The reader who wishes to pursue this can consider item 20, which reads: "A truck ran over a man, broke both his legs, and crushed his trunk" (p. 291). The question is, when did Stevenson formulate the wording "A truck ran over a man" thus leaving open whether the man run over was the past-life or not? The parents certainly took it that Imad thought his past-life was killed as a result of an accident (pp. 303-304). And Stevenson understood right to the end that the boy took it that the past-life had died as a result of the accident (p. 319). Then by what right did he alter the claim. Stevenson has seemingly obfuscated the prior claims and distorted what he understood to be the boy's memories.

3. A third requirement is that data must not be presented in such a way as to obscure alternative hypotheses. Consider the identification of the town of Khriby. In the tabulation we find that the boy is presented as having remembered:

> 1. His name was Bouhamzy and he lived in the village of Khriby. (p. 287)

In the general account of the events, it is reported that Imad "had given the name of the village (Khriby)" (p. 276). Stevenson apparently made no effort to clarify *when* the boy was supposed to have begun to refer to the name "Khriby." However, we are given to understand that the boy's claims were taken seriously only after "a resident of the village of Khriby, where Imad claimed to have lived,

came to Kornayel, and Imad, seeing him in the street, recognized him in the presence of his paternal grandmother" (p. 276). However, Stevenson does not clarify for us—nor, apparently, did he attempt to clarify for himself—whether or not the identification of the town of the previous life as Khriby by Imad *followed* the "recognition" of the lost friend in the street or *preceded* it. Did people infer from the recognition in the street that Imad's past-life would have been in the town of the person "recognized," which is to say, Khriby? Or did Imad first state that his past-life was in Khriby and then recognize the visitor from Khriby as a neighbor of his past-life? Nothing in the presentation clarifies the point. Thus the tabulation of data creates an unwarranted impression that there was an *original* memory of the boy that the residence of the past-life was a town named "Khriby." A similar question can be raised about the name "Bouhamzy." Stevenson's handling of this sort of issue, indeed, his failure to mention these questions, vividly demonstrates an unfortunate insensitivity to central issues in data-gathering, presentation, and interpretation.

4. Tabulation of the data should not hide problems in comments. However, Stevenson fails egregiously on this issue. A typical example: according to item 35, the boy referred to a full well and an empty well at the home of the past-life. This is taken as confirmed by the fact that there were two vats used for storing grape juice. "During the rainy season one of these vats became filled with water, but the other, shallower vat did not, because the water evaporated from it. Thus one would be empty while the other was full" (p. 293). Does a five-year-old Druse village boy not know the difference between a vat and a well?

5. The specific methods of verification should be properly documented. However, Stevenson's method of reporting on his verification standards is certainly inadequate, and there is strong reason to believe that his verification standards themselves are inadequate. For example, we see that Stevenson, on at least some occasions, gathered information by leading questions: "*It occurred to me to ask the next day if Ibrahim had happened to have tuberculosis of the spine.* Mr. Haffez Bouhamzy then stated that Ibrahim had tuberculosis of the spine" (p. 281; emphasis added). We soon find out that the response thus elicited was contradicted by the brother of Ibrahim Bouhamzy. Thus, Haffez's verifications are of questionable reliability. He seems to have been willing to go along with suggestions. According to the tabulation, however, the verification of data hinges very largely on Haffez's remarks. Haffez Bouhamzy was a verifier of 28 items. All told, Stevenson's failure to document his methods of eliciting verification must count as a serious, even fatal, flaw in his work.

6. Most deeply problematic is the fact that the most challenging rival account of the data to the reincarnation hypothesis has not even been raised, let alone assessed. The appropriate rival account has to do with the statistics of the informational nexus surrounding any "psychically" delivered material.

Consider the names, for instance. Was it likely that there had been references to the name "Bouhamzy" that Imad would have heard prior to using it? (Yes.) Are the first names, "Mahmoud," "Amin," "Said," and so on, common names? (They are.) Was it common for there to be wells in these villages? (Yes.) How common were garages, sheds, gardens, and other items prominent in the tabulation of supposed verifications? (Very

common.) In general, then, how difficult would it be to find someone in any large village in that general vicinity who matched more or less as many features as Ibrahim Bouhamzy is said to have matched, given an equal amount of post-facto reinterpretation and latitude allowed?

The correspondences between Imad Elawar's memories and Ibrahim Bouhamzy of Khriby are hardly impressive when we remember the information accepted originally by Stevenson and other points buried in the comments: The boy seemed to claim he was Mahmoud Bouhamzy, but no Mahmoud Bouhamzy fitting other features could be found. The best candidate according to Stevenson and the family members was Ibrahim Bouhamzy. But Ibrahim Bouhamzy did not have a wife named Jamilah, did not have a daughter named Mehibeh, did not have a brother who was a judge in Tripoli, did not have a son called "Adil," did not have a son called "Talil or Talal," did not have a son called "Salim," did not have a son called "Kemal," did not have an accident in which his legs were broken, did not go to the doctor's place where he had an operation as a result of the accident, nor was any accident connected with Ibrahim the result of a quarrel with the driver of a truck in the accident, nor were people killed in such an accident, nor did Ibrahim die as a result of an accident, nor was the driver of Ibrahim's truck, or any truck, involved with Ibrahim, a Christian, nor did Ibrahim have a hunting dog, nor did Ibrahim have two wells at his house, nor did Ibrahim use a truck to haul stones to his garden (nor was the truck in the accident full of stones), nor was it correct that Ibrahim had enough money and land so as to enable him to have no regular business (Ibrahim used a truck commercially and was a bus driver), nor was the memory correct that he himself did not drive his truck (since Ibrahim was a truck driver), nor were there two garages in Ibrahim's house, nor was it true that Ibrahim had had one goat (rather, Ibrahim's family had a flock of goats when Ibrahim was young), nor is it true that Ibrahim had a sheep (his family had a flock of sheep when he was young), nor is it true that Ibrahim had five children (Ibrahim never married, and died at the age of 25, after spending the last year in a tuberculosis sanatorium), nor could Ibrahim speak English.

In virtue of what original claims, then, does Stevenson allow himself and the family to zero in on Ibrahim Bouhamzy? There were three informants who said Ibrahim had a mistress named Jamilah, and three who gave "discrepant testimony." Jamilah was beautiful, and Imad said Jamilah was beautiful. Jamilah wore red and dressed well; Ibrahim was a "friend" of the famous Druse politician Kemal Joumblatt; he had a farm; there was a sort of entrance with a round opening; Ibrahim was fond of hunting; Ibrahim had a hidden gun; Ibrahim once beat a dog; there was a slope near Ibrahim's house; Ibrahim had been rebuilding his garden; Ibrahim had a small yellow automobile, a bus, and a truck (although they were owned by the family and not, as Imad had suggested, by the past-life as an individual). That seems to be the sum total of the correspondences remaining from the original prior-to-verification memories. (That the garden had cherry and apple trees cannot be taken to verify the memory that "the new garden had cherry and apple trees" since Stevenson did not claim to establish when these trees were planted.)

All these correspondences are easily accounted for on naturalistic lines. Given all the failures, the

uncertainties, the unexplored contrary possibilities, and the evident unreliability of the supposed verifications, the case seems particularly unimpressive. Most important is this: the boy seemed to have in mind that in his past-life he was an important family man, wealthy enough not to have to work, with a beautiful wife and five children, moving in important circles, who met with a tragic accident in which his legs were broken, from which he died. This just doesn't seem to be Ibrahim Bouhamzy, a truck driver who used his family's cars, and died unmarried, and probably childless, at 25 of tuberculosis. It's only the way in which the information is misleadingly tabulated that leads people to miss the problems. Once we factor in what Persi Diaconis (1978) calls the problems in confirming data with "multiple end points," we see just how weak the Imad Elawar case is.

By far the majority of the details of the original claims attributed by the parents to their son were failures, but discounted on some ground or other. One can't help but wonder what the boy would have done if he had been led to some other village altogether. (For clear evidence of the boy's malleability, see p. 312.) All in all the truly relevant rival hypothesis to reincarnation is that of a distorted impression of the significance of the data. Yet Stevenson never even considered it.

Conclusions: In sum, Stevenson does not skillfully record, present, or analyze his own data. If a case regarded by Stevenson to be among the strongest of his cases—the only case of the 20 that had its purported verifications conducted by Stevenson himself—falls apart under scrutiny as badly as the Imad Elawar case does, it is reasonable to conclude that the other cases, in which data were first gathered by untrained observers, are even less reliable than this one.

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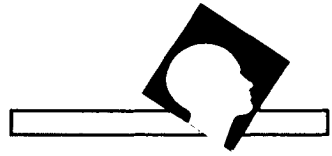
A Reader's Guide to the Ozone Controversy

BOYCE RENSBERGER

The scientific and political debate about the ozone hole and depletion of the earth's ozone layer may seem outside our normal concerns. But many readers, perhaps wary of some of the media coverage of this issue, have asked us for a critical evaluation of the claims. We here publish an award-winning article about the ozone controversy that does attempt to present a balanced scientific picture. In February 1994, this article received the American Association for the Advancement of Science–Westinghouse Science Journalism Award for large newspapers. The author, Boyce Rensberger, is a respected science reporter at the Washington Post, *where the article originally was published on April 15, 1993. Rensberger is a past recipient of CSICOP's Responsibility in Journalism Award. This article generated considerable controversy, and on page 496 Rensberger provides a follow-up especially written for us about the reaction.*—EDITOR



Partly due to actions taken, the threat to the global ozone may be less serious than many dark scenarios have portrayed it. Here's a layperson's guide to the facts about the debate.

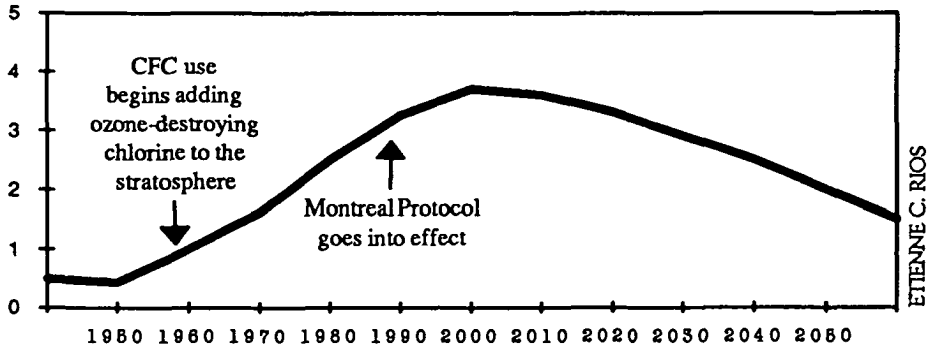
After nearly a decade of headlines and hand-wringing about erosion of the earth's protective ozone layer, the problem appears to be well on the way to solution.

As a result of the Montreal Protocol, an international treaty obliging signatory countries to phase out ozone-destroying chemicals, scientists expect the threat of ozone destruction to peak in just seven years. In the year 2000, according to the latest scientific estimates, the ozone layer should start slowly getting thicker and better able to block the sun's harmful ultraviolet (UV) rays.

In fact, researchers say, the problem appears to be heading toward solution before they can find any solid evidence that serious harm was or is being done.

RISE AND FALL OF THE OZONE THREAT

Chlorine in the Stratosphere; Parts per Billion



NOTE: Chart adapted from the *Washington Post* (April 15, 1993); based on latest scientific findings.

This hopeful trend—at variance with the dark scenarios of environmental doom that were pronounced after discovery of the Antarctic ozone hole in the 1980s—is supported not only by growing scientific evidence but even by scientists in the environmental movement.

"The current and projected levels of ozone depletion do not appear to represent a catastrophe," said Michael Oppenheimer, an atmospheric scientist with the Environmental Defense Fund. "But I'm flabbergasted that we let it go this far before taking action. It was a potentially very serious problem."

Richard Stolarski, an atmospheric scientist at NASA's Goddard Space Flight Center, agreed: "I happen not to be of the disaster school. It's a serious concern but we can't show that anything really catastrophic has happened yet, or that anything catastrophic will happen in the future."

Attempts to detect the most feared effect of ozone depletion—increased bombardment of the earth's surface by ultraviolet rays—have failed to turn up any evidence of increased UV influx outside the Antarctic region during the few weeks each year that the ozone hole is open.

If there has been any increase in UV, researchers say, it is too small to measure against a background of normal ultraviolet levels that rise and fall by large amounts for entirely natural reasons on time scales from hours to decades.

Given the expected improvements in the ozone layer, even the ozone hole eventually could stop opening. Already scientists see signs that the hole is not likely to grow much bigger than it has.

Even when the problem reaches its worst in 2000, scientists expect summertime ozone losses over temperate zones to be about 6 percent, double what they are now. Because each percentage point of ozone loss theoretically leads to an increase in UV intensity of 1.3 percentage points, the potential increase in ultraviolet would be about 8 percent.

Scientists calculate that the increased UV exposure a Washingtonian would get in midsummer then will be the equivalent of moving south about 200 miles now. In other words, if you want to know what this area's ultraviolet level will be like in July 2000, go to, say, Raleigh, N.C., this July.

Worst Depletion Occurs in Late Winter

Latitude is crucial because, like time of day and season, it affects the amount of atmosphere that UV must pass through to reach the ground. When the sun is directly overhead, for example, its light penetrates one thickness of atmosphere, but when it is on the horizon, its rays take a slanting path roughly equivalent to 40 thicknesses, and 40 times as much ozone.

This is key to understanding why, even though ozone depletion is worst in late winter (ozone is reduced by 8 to 10 percent), less ultraviolet gets through than in summer, when the ozone loss is milder. Sun angle is so low in winter that the UV passes through more ozone then than during summer when there is less depletion. (Over the tropics, where sun angle is high all year long, there has been no observed ozone depletion.)

"One reason we haven't seen any increase in UV is that we didn't start taking good data long ago," said Stolarski, who nearly 20 years ago was among the first researchers to assert that the ozone layer could be damaged if certain chemicals—expecially chlorine—traveled high enough in the atmosphere.

Ultraviolet Rays Fluctuate Naturally

Because of natural fluctuations in ultraviolent, it is impossible to detect a trend in a short period of data collection.

While there is evidence that the ozone damage is happening, it has proved impossible so far to detect any resulting increase in UV reaching the ground, because ultraviolet fluctuates so much naturally.

"The amount of increase that the theory says we could be getting from ozone depletion is smaller than the error of our best measuring instruments," said John E. Frederick, an atmospheric physicist at the University of Chicago.

"People get all excited about a few-percent change in UV,but it's nothing to get a 20 percent increase naturally," Frederick said. "If an increase of 20 percent were going to be so damaging, there should be no life in Florida," where ultraviolet always exceeded the allegedly dangerous levels once forecast for more northerly latitudes.

Los Angeles Pollution Cuts Levels of UV

Stolarski, Frederick, and other atmospheric scientists say that even if there were good UV measurements going back many years, they still might not show an increase, because other factors, such as increased cloudiness (one of the predicted effects of global warming) and air pollution (including pollution by ozone in the lower atmosphere), might be shielding the ground, compensating for the lost upper-atmosphere ozone.

That, in fact, was a conclusion of one of the most exhaustive studies of the ozone problem ever undertaken, an effort in which nearly 150 scientists from 28 countries collaborated under the auspices of five American, British, and United Nations agencies.

"The decreases in UV-B [the damaging form of UV] caused by increases in [air pollution] since the industrial revolution probably exceed the increases due to ozone depletion," according to the group's latest report, "Scientific Assessment of Ozone Depletion: 1991."

In Los Angeles, Frederick said, there is so much extra ozone in the

lower atmosphere in the form of air pollution from cars that it cuts the ultraviolet level on an average day by 6 to 9 percent. On smoggy days, the UV level drops by 20 percent.

Without Shield, Almost Uninhabitable Earth

If any of this comes as a surprise, it may be because most of the mass media coverage of this complex issue has focused on cries of alarm by environmentalists who feared a worst-case scenario in which the planet's protective ozone layer would be thinned enough to let in massive amounts of solar radiation.

If the ozone shield did not exist, the surface of the Earth would be virtually uninhabitable. The amount of ultraviolet that reaches the top of Earth's atmosphere would be lethal to most forms of life if it penetrated to the ground.

The world responded to the environmentalist case. The main threats to the ozone, synthetic chemicals called chlorofuorocarbons (CFCs) used chiefly as refrigerants, solvents, foam-blowing gas, and once as spray-can propellants, are being phased out. In fact, production and sales of CFCs are declining faster than originally projected by negotiators of the Montreal Protocol.

So well are the corrective measures proceeding that scientists who have been looking for effects of ozone depletion say it may not be possible to document any before the massive injection of CFCs into the atmosphere fades away, ending humanity's inadvertent experiment in perturbing Earth's atmosphere.

Nevertheless, debate over various facets of the subject is likely to continue. What follows is a readers' guide to the facts underlying the controversy.

Contrary to Popular Notion, Ozone Is a 'Renewable Resource'

Ultraviolet Radiation Has Created, Destroyed Ozone for Eons

The destruction of ozone—a form of oxygen in three-atom clusters—is nothing new in the atmosphere. It had been happening naturally for billions of years before E. I. du Pont de Nemours and Company Inc. invented CFCs, and for several different reasons. For one thing, ozone is destroyed by the very act of absorbing ultraviolet radiation. And, paradoxically, ozone is created by ultraviolent radiation.

In other words, the ozone layer—contrary to popular impression—is not a limited resource that is being irreparably destroyed. In fact, ozone is made so rapidly in the upper atmosphere that the entire amount destroyed in the annual Antarctic ozone hole (up to 70 percent of what was there) is entirely replaced long before the next hole develops. "Ozone," as Stolarski puts it, "is a renewable resource."

Ozone's life cycle takes place mainly in a slab of atmosphere called the stratosphere, the second layer up from the ground.

The lowest layer, the troposphere, varies in thickness from about six

miles at the poles to about 10 miles over the tropics. It contains 80 percent of the mass of air but only about 4 percent of its thickness, figuring that the atmosphere goes up about 250 miles.

The defining characteristic of the troposphere is that the temperature drops as one rises through it in altitude. At the top of the troposphere the air temperature ranges from -60° Fahrenheit over the poles to -120° over the tropics.

(The top of troposphere is highest and coldest over the tropics because the region's fast-rising warm air puffs the atmosphere up. The rising air mass then splits into northbound and southbound air masses, cooling and sinking as they move. This flow transports the ozone made in the tropics to the poles.)

In the stratosphere the temperature profile is reversed. The higher you go, the warmer it gets, until, at its top—about 30 miles above the ground—it can be as toasty as 45° F over the summer pole and a not-quite-balmy -27° over the winter pole.

Ozone is what warms the stratosphere. When an ozone molecule absorbs a dose of ultraviolet light, solar energy turns into heat. While ozone can be found through the entire atmosphere, it is thickest at around 15 miles of altitude, roughly the center of the layer.

Even there, however, it is a rare gas, accounting for just one in every 100,000 molecules in the ozone layer. (Roughly 80,000 are nitrogen and 20,000 are ordinary oxygen.)

Solar Rays Strike Oxygen Molecules

So scarce is ozone that if the 250-mile thickness of the atmosphere were squeezed down so that it was all at the same pressure as at sea level, the atmosphere would be just five miles thick and the ozone would account for just ⅛ inch of it.

Ozone is created (mainly in the stratosphere) when highly energetic solar ultraviolet rays strike molecules of ordinary oxygen (O_2, sometimes called molecular oxygen) and split apart the two oxygen atoms. If a freed atom bumps into another O_2, it joins up, forming O_3, which is ozone.

This new molecule has the special ability to absorb a certain class of ultraviolet rays called ultraviolet-B, or UV-B, which have a wavelength that is especially damaging to living cells. UV-B passes through ordinary oxygen and nitrogen like light through glass.

When ozone absorbs UV-B, it is destroyed, splitting into ordinary oxygen and a free oxygen atom. Usually the loosed oxygen atom links up with another ordinary oxygen molecule to form a new ozone molecule ready to take another dose of UV-B. But if the atom collides with an ozone molecule, it steals one oxygen atom, yielding two molecules of ordinary oxygen.

"The lifetime of an ozone molecule is just a matter of minutes if it's at high altitude," said Bill Mankin, an ozone researcher at the National Center for Atmospheric Research in Boulder, Colorado, "but if it's farther down in the atmosphere, the lifetime can be months."

The difference exists because the low-altitude ozone is shielded from ultraviolet light by the ozone above it. Loss of this shielding effect, for example, after the ozone hole opens over Antarctica, speeds up the destruction and creation of new ozone.

Amount of Ozone in Any Location Varies

In their brief lifetimes, ozone molecules drift and swirl above the Earth's surface, blown in varying concentra-

tions by wind. Atmospheric scientists say that if ozone were visible from space, its changing concentrations would look much like the familiar weather-satellite images of moving clouds.

Because of this constant movement, the amount of ozone above any given spot on the planet—and hence the amount of ultraviolet light filtered out—can vary widely from hour to hour. Ozone concentrations also change more predictably on separate natural cycles of one day, one year, two years, and eleven years.

There are two reasons for such uncertainty—among scientists if not environmentalists—about the relative danger of ozone depletion. One is that all living things have been coping with large swings in the ozone, and hence UV radiation, for millions of years. The other is that because of these natural swings, measurements of ozone levels go up and down in irregular ways and it is hard to see a long-term trend against the background. Scientists refer to it as trying to pick out the signal from the noise.

For example, the annual cycle means that the amount of ozone in the atmosphere above temperate latitudes is naturally about 20 percent higher in April than it is in October. The actual number varies from year to year; 20 percent is an average over the past 60 years.

The natural 20 percent drop in ozone levels is four or five times the 4 to 5 percent drop attributed to human causes—although, of course, in any given moment, the human effect is added to the natural effect.

Amounts of ozone over tropical regions also vary by about 4 to 5 percent over a roughly two-year cycle, in step with a biennial reversal of the prevailing high altitude winds over the equator. In addition, the roughly periodic warming of the southern Pacific Ocean surface known as El Niño also causes tropical ozone levels to fluctuate by 3 to 4 percent. Sometimes El Niño and the biennial reversal are in phase, their effects adding together; at other times they almost cancel out each other.

Even the 11-year sunspot cycle plays a role, the presence of sunspots corresponding to times when the spectrum of solar radiation is most favorable to creating ozone.

"You've got to take the solar cycle into account," said James Angell, who monitors global ozone cycles for the National Oceanic and Atmospheric Administration. "If you don't, you could see an ozone change and think that something else caused it."

Angell's data show that global ozone levels rise and fall about 2 to 3 percent through a normal solar cycle. For example, from 1979 (a maximum in the sunspot cycle) to 1985 (a minimum) global ozone levels dropped because of the solar cycle. This happens to be the period in which the Antarctic ozone hole was first detected.

Since then, the cycle rose again, peaking in a maximum that ran from 1989 through 1991. But during what should have been a period of high ozone production, Angell's observations show ozone declined by 2.7 percent. This suggests other factors, possibly including human causes, pushed depletion faster than creation.

One of the big unknowns, incidentally, is whether the depletion of ozone over temperate latitudes has anything to do with the ozone hole over the South Pole. One theory suggests that destruction of ozone there is slowly draining ozone from all over the world faster than it can be recreated. A rival theory holds that temperate zone ozone is being broken down by a separate phenomenon.

"All the factors that affect ozone go on simultaneously and that makes it very hard to pick out any one of them and say it's responsible for thus and such a part of the change," Stolarski said. "Some things are extremely solidly known and some are not. One thing we can say is that we are very confident the overall depletion of ozone is real."

In the Debate About Ozone No Depletion in Rhetoric

Public debate over the possible effects of an eroding ozone layer often has been characterized by inflammatory claims and doomsday rhetoric.

Vice President Gore's popular book, *Earth in the Balance: Ecology and the Human Spirit*, says ozone depletion has become so bad that hunters in Patagonia are finding rabbits blinded by increased ultraviolet. Anglers, Gore reports, are catching blind fish. Other accounts add that Patagonian sheep are going blind.

The reports gained credibility because Patagonia is at the tip of South America, not far from the Antarctic ozone hole. Yet, efforts to link the rabbit and fish claims to ozone depletion have failed. And the sheep, it turned out later, just had eye infections. While ozone scientists have not made such claims, some have adopted similarly dramatic language. In a booklet called "Report to the Nation: Our Ozone Shield," researchers at the National Oceanic and Atmospheric Administration say, "Life as we know it is possible in part because of the protection afforded by the ozone layer," but that is now "in jeopardy." They called the discovery that industrial chemicals are to blame "a dark message for the world."

Even environmentalists have found some of the debate hard to take. "Unfortunately, we have very little hard data on the effects of ozone depletion," said Michael Oppenheimer of the Environmental Defense Fund. "To begin with, no one knows how much increase in ultraviolet there's been. All we can really say is that there has been a likelihood of some increase in some areas. When there isn't much data, there's room for lots of wild speculation."

One of the most widely repeated claims is that during the past decade skin cancer rates—known to be linked to UV exposure—have doubled. While true, the fact is that skin cancer rates have been climbing steadily through most of this century.

According to data from the American Cancer Society, for example, the skin cancer rate in the United States now is nearly eight times higher than it was 30 years ago. Because there is a long lag between exposure and disease, the 732,000 Americans who are expected to get skin cancer this year will be suffering for their exposure to ultraviolet long before CFCs became a threat.

Decline Found in Planktonic Organisms

The rising trend, cancer researchers say, is the result not of ozone depletion or increased UV (if anything, UV levels have declined in populated areas because of increasing low-altitude air pollution), but of lifestyle changes, such as wearing skimpier clothing in summer, spending more time out-

doors, and spending more of that time in southerly altitudes.

Still, it is true in principle that if ultraviolet levels increase, they should raise the number of skin cancer cases—at least among light-skinned people—and assuming the trend toward less tanning and more use of sunscreens does not continue. One rule of thumb scientists use is that for every decline of 1 percentage point in ozone, there is a 1.3 percentage point increase in the amount of DNA-damaging UV.

The only credible claim of a biological effect that has already occurred comes from those who study microscopic creatures in the ocean surrounding Antarctica. Ray Smith of the University of California at Santa Barbara has found evidence of a 6 to 12 percent decline in the number of these planktonic organisms while the ozone hole is open. Some scientists criticize Smith's methods and say the results probably overestimate the damage.

"One problem is that we only began studying this after the ozone hole was in existence," said Deneb Karentz of the University of San Francisco, who also studies Antarctic plankton. "If these were organisms that were extremely sensitive to UV, they could be gone now."

Despite the hole, the planktonic organisms are not helpless. Karentz has discovered that virtually all of them can protect themselves against increased ultraviolet with a natural sunscreen, a colorless molecule that absorbs UV-B. Algae make the sunscreen in response to an increase in UV. Planktonic animals extract it from the algae they eat and, instead of digesting the molecules, distribute them in their own bodies.

So effective is the molecule, Karentz said, that an Australian firm is working to synthesize the substance and sell it as a natural sunscreen for humans.

Testing for Effects of Higher UV Levels

Botanists have found that land plants also make their own natural sunscreens, molecules called flavenoids. These molecules are analogous to the melanin that human skin makes to tan itself for protection from ultraviolet, except that plants can do it much faster. Some plants respond within hours to changes in UV level, increasing their flavenoid content each morning as the sun moves higher, lowering it if the day turns cloudy to take in more of the visible wavelengths needed for photosynthesis, and dropping it to low levels through the night.

Flavenoid content also varies with latitude. The farther south a species' growing range, the higher the flavenoid content. But each species has a limit. If it is transplanted still farther south, the plant may not be able to make enough flavenoid to protect itself and its growth will be retarded.

While scientists find no solid evidence that land plants are suffering from increased ultraviolet bombardment, experiments are under way to see what might happen in the future if UV levels go up significantly.

Alan Teramura of the University of Maryland, for example, has been growing various food crops and tree species under sunlamps that boost the UV levels by as much as 50 percent. This is several times as much extra ultraviolet as is expected in the year 2000, when ozone depletion is projected to reach its worst.

At these high doses, about two-thirds of the 50 varieties tested displayed reduced yields. The most sensitive soybean varieties, for exam-

ple, lost as much as 25 percent of their yield. Other varieties were unchanged and a few increased their yields slightly. Because soybeans are Maryland's leading field crop, researchers are working to develop varieties with enhanced UV-B resistance.

The effect on perennial species, such as loblolly pines, was more insidious. Teramura has found that with each passing year the trees' growth was stunted by a larger amount. Studies are continuing to see whether the effect of massive UV doses will eventually kill the trees.

"The effects in trees that we see now may be small and subtle but they accumulate over time," Teramura said.

Still, "I'm optimistic," said the Environmental Defense Fund's Oppenheimer. "I believe the Montreal Protocol is already solving the problem before it gets out of control." □

Hard Time Dealing with Good News: Reaction to My Ozone Story

BOYCE RENSBERGER

The reaction to my ozone story was swift. Some readers were perplexed because they were under the impression that the amount of ozone depletion was approaching alarming proportions. My story didn't square with the prevailing public image of the problem. Other readers were angry because they were sure the world was already plunging into ultraviolet hell. They thought I was maliciously trying to discredit the environmentalist movement. There were letters, phone calls, and clippings of articles in environmentalist advocacy publications branding me an enemy of the planet.

One of my favorite phone calls came from a man who sputtered with anger and accused me of not caring that because of the ozone hole polar bears were going blind. I tried to explain that the hole is at the South Pole and the bears are closer to the North Pole, but he regarded that as an obfuscatory tactic.

On a more rational level, the first perplexed group I heard from was the Congressional environment caucus, which is a group of legislators and staffers who deal with such issues. A member phoned me to say that the caucus was so startled by my story that they had summoned a prominent atmospheric scientist at NASA to come in and please tell them what gives. According to my informant, the caucus members were pretty sure my story was way off base. "You ought to come and see what happens," he said. "I think you'll find it interesting."

I went, sat in the back of the room, and nobody recognized me. Well, the NASA scientist said (and I paraphrase): Rensberger's story is basically correct on the facts, but there is a problem with his tone.

I was to hear the "tone" complaint many times. It puzzled me that a story could be factually correct and written in what I thought was a straight, unemotional style but be considered

wrong in "tone." Eventually I figured it out, I think.

Environment stories are usually written in an alarmist tone. That is to say, the stories deal with purportedly alarming developments and the sources are often people who wish to sound an alarm. A species is endangered. A chemical is toxic. The Earth is in peril. That's just the way this kind of story is usually written in the news business. And, often enough, the facts truly are alarming. But it's become the norm in much environment writing to state things in this alarmist tone even if the facts are not well established.

As a science writer, coming out of a somewhat different journalistic tradition, I try to write my stories in a neutral, purely informational tone—and also to highlight the facts that strike me as posing the greatest challenge to conventional thinking. I suspect that people had become so used to alarmist stories on ozone depletion that my neutral story appeared, by contrast, to be unduly optimistic. Some people even came away with the impression that I had claimed that the ozone depletion problem was a hoax.

Now, as it happens, there were some people making the hoax claim—Rush Limbaugh, the late Dixy Lee Ray (former governor of Washington), and some disciples of Lyndon LaRouche. Unbeknownst to me, these people had been writing books and articles claiming that there were fatal defects in the scientific case that CFCs cause ozone depletion. For the most part, these people are way off base, but they have large followings in the political right wing. I didn't know about them when I wrote my story because they weren't dealing in science and I wasn't dealing in politics. But on account of the "tone" problem, I got lumped in with them as part of an "ozone backlash."

Even the American Chemical Society, whose members you would expect to be critical readers, made this mistake, citing me in the same breath as the debunkers in a press release and in a news article in their magazine. The story aroused so much controversy that the Society of Environmental Journalists invited me to speak at their annual meeting on the question of whether there is a backlash in environmental reporting.

By the time of that meeting, the furor had calmed down considerably. Most important, in August 1993, solid scientific underpinnings for the main point of my story—that depletion would peak in the year 2000 and that the ozone layer would then start getting thicker—emerged when the National Oceanic and Atmospheric Administration published a report in *Nature* confirming what I had said. In fact, the news was even better than I had realized. CFC production was declining faster than previously calculated. According to NOAA, the peak would come in 1998 or 1999.

The moral of the story is that environmentalists have a hard time dealing with good news. When the government took the bald eagle off the endangered species list in June, for example, some environmentalists were upset. They saw it as bad news. In fact, as I told many people who complained about my ozone story, it would probably do the movement good to see that efforts to protect the environment can succeed. □

Bigfoot Evidence: Are These Tracks Real?

MICHAEL R. DENNETT

Controversy is nothing new to participants in the search for the legendary Bigfoot or Sasquatch monster. Grover Krantz, associate professor of anthropology at Washington State University, in Pullman, has often been at the center of the storm that is Sasquatch research. His recent book, *Big Footprints: A Scientific Inquiry into the Reality of Sasquatch* (see review, p. 528), and his promotional efforts on television are sure to keep the controversy boiling.

Part of the objection to Krantz stems from his call for a specimen to be obtained: dead or alive. He has been quoted as saying (Markotic 1984) that once a Bigfoot is killed, the hunter "should cut off the biggest piece you can carry back . . . the head would be best. . . . If less must suffice, half of the lower jaw would be the single, most useful part." Many have assumed that Krantz himself had no intention of killing a Sasquatch. But in *Big Footprints*, Krantz says he actively tried to bag the creature. By driving back roads at night he hoped to spot a Bigfoot. Krantz (1992a: 239) writes: "My usual speed was 25 miles (40 km) per hour. After some practice, I could stop the car, set the brakes, turn on the extra lights, pick up and load the gun, and be standing 'at point' outside the car—all in just fifteen seconds."

A smaller group of Bigfoot buffs, including René Dahinden, perhaps the best-known Sasquatch researcher, opposes Krantz on the grounds that he is unscientific. A particular point of contention between Dahinden and Krantz is a set of tracks from the Mill Creek watershed in Oregon's Blue Mountains. Krantz maintains that these big footprints are among the best evidence for Sasquatch. Dahinden

Is a new plaster cast of a 'Bigfoot' footprint from Indiana authentic evidence of a Sasquatch, as Grover Krantz and others proclaim? Our author tracked down the man who sent it to Krantz and here reveals its true origin.

(1993) maintains they are not authentic. "Look," he told me, "any village idiot can see [the Mill Creek] tracks are fake, one-hundred-percent fake!"

At the heart of the issue between Krantz and these other researchers is Krantz's often-asserted position that he cannot be fooled. In a 1992 television interview, reporter John Yager asked Krantz: "How long have you believed there is something out there?" Krantz (1992b) replied:

> The term "believe" usually means an opinion held because it makes you feel good. The first time I ever heard of these things I was about sixteen: I believed it instantly. But did I think they were real: no, no way!
>
> I was here at Washington State University for about two years before I got hold of some direct information. That information amounted to a pair of footprints I saw in the wild. I got casts of the prints and analyzed them. The right and left were quite unlike each other. One was obviously crippled. I analyzed them and decided that the design of the foot that implied crippling was exactly what you would expect for a creature about eight feet tall and enormously heavy.
>
> If someone faked [these footprints] with all the subtle hints of anatomy design, he had to be a real

MICHAEL R. DENNETT

This photo appeared in the January 18, 1989 *Spokane Spokesman-Review.* Washington State University President Sam Smith (*left*) presents a cast of a Bigfoot footprint to Terry Brown (*right*). Grover Krantz (*center*) looks on. Brown received the cast on behalf of the Community Colleges of Spokane, whose team symbol is the Sasquatch. In the accompanying article, staff writer Dave Hirschman quoted Krantz as saying, "The Sasquatch that made this (footprint) is called 'Big Daddy,' and he is a large male among a group in the Blue Mountains we call the 'Gang of Four.' " Hirschman reported that Krantz said that Big Daddy weighs 800 pounds and stands 8 feet tall.

> genius, an expert at anatomy, very inventive, an original thinker. He had to outclass me in those areas, and I don't think anyone outclasses me in those areas, at least not since Leonardo da Vinci. So I say such a person is impossible, therefore the tracks are real.

Yet Krantz has many supporters within the Bigfoot field. He is also garnering some support from an unlikely quarter: the academic community. Says Krantz (1992a: 246): "Recently the academic climate has greatly improved. [My] major objectors [at WSU] have retired or moved away, some of the other faculty are genuinely interested, my chairman is open-minded and supportive, even the new president of the university finds the subject very interesting."[1]

The case Krantz presents, particularly in his new book, is impressive if the reader assumes he is telling the complete story. But Krantz fails to provide important details associated with the "evidence," and in my view he slants the presentation by omitting pertinent information. His case rests primarily on *his analysis* of two sets of footprints ("Cripple foot" and Mill Creek) and two separate sets of handprints (found by Ivan Marx and Paul Freeman). He has determined that these footprints are unquestionably authentic and that the handprints are most probably real.

To support his position, Krantz introduces a new item of evidence: a single Bigfoot print from Bloomington, Indiana. The Bloomington track is important because it shows dermal ridges and valleys (which on the hand we call fingerprints). I have some surprising information about this track to report. But to understand the significance of this track one first needs to know the controversy whirling about the Mill Creek tracks.

The Mill Creek tracks were discovered in 1982 by Paul Freeman. The tracks, when examined, showed dermal ridges. Based on the ridge detail and his assessment that the anatomy of the tracks is precisely the anticipated shape for a Bigfoot creature, Krantz concluded the tracks were real. Since Krantz first published a paper on the tracks, their authenticity and the credibility of Paul Freeman have come into question. In 1987 Freeman admitted he had tried to fake Bigfoot prints prior to his 1982 discovery of the Mill Creek tracks. In 1989 I wrote an article in this journal (Dennett 1989) detailing evidence strongly suggesting the hoax possibility of the Mill Creek imprints.[2] My article cited an investigation by the Forest Service that concluded the tracks were fakes. Since then more evidence against the authenticity of the tracks has surfaced.

Lonnie Somer, a Washington State University graduate student, made a presentation on Bigfoot hair samples to the annual meeting of the International Society of Cryptozoology. The gathering was hosted by the Department of Anthropology at WSU in June 1989. Somer obtained several hair samples said to be from a Sasquatch, all from the Blue Mountains, of which the Mill Creek watershed is a part. He reported that he made microscopic observations of the cross-sections and shapes of the hairs. He conducted tests of the pattern of the burn and of the smell. In these instances the Sasquatch "hair" differed from human and animal samples. He discovered that no hair follicles or scales were present on his Bigfoot samples, although human and animal hairs showed both follicles and scales. Somer compared the alleged Bigfoot hair with synthetic wig fibers. He found the synthetic fibers varied from the human and animal samples in the same way as the alleged Big-

foot hair. His conclusion was that the Sasquatch hair samples were artificial fibers. When asked what this meant, Somer replied that he believed someone was "perpetrating a [Bigfoot] hoax!"[3]

Krantz mentions Somer's presentation in his book and agrees that it indicates hoax activity in the Blue Mountains. He does not connect the fake hair samples with the Mill Creek tracks, nor did Somer in his presentation. When I asked, Somer (1989) confirmed that he had obtained at least one set of hair samples from a site discovered by Paul Freeman.[4] In view of Freeman's prior history of Bigfoot hoax activity and his subsequent connection to the synthetic hair, his association with the Mill Creek tracks surely put them in question.

Early in 1990, Dahinden approached me with additional information linking Freeman with hoax Sasquatch evidence. Dahinden related that he was present in November 1987 when Freeman "discovered" yet another set of prints.[5] These tracks were found near the junction of Indian Springs Road and Squaw Springs Road in the Blue Mountains, not far from the Mill Creek watershed. Dahinden was immediately suspicious of these imprints, which he called the Indian Springs tracks. The tracks were depressed well into the ground, but when Dahinden stepped near them he barely left a mark. "I took off my shoes and socks and walked around to see what type of impression I might make," he explained (Dahinden 1990). "I didn't leave much of a track, but when I looked closely I could see the imprint of my dermal ridges. Yet the Bigfoot tracks did not show any dermal ridges! I was taking photo-

MICHAEL R. DENNETT

René Dahinden shows a track from the Indian Springs find.

graphs and as I attempted to blow some soil out of the toe of one impression I displaced some dirt. The disturbed soil was from the top lip of the footprint impression between the second and third toe. Looking closer I saw a small piece of dirt with a skin pattern [dermal ridges]. It is my view that this skin pattern was made by someone patting down the dirt before pushing more dirt on top."

Dahinden photographed the tracks, and Freeman made plaster casts. It was not until later, when examining the photos, that Dahinden realized a sequence of four consecutive tracks consisted of a left, right, left, and left imprint (see photo).[6]

Significantly Krantz never mentions the Indian Springs tracks in his book. He does talk about five additional sets of footprints discovered by Freeman that he apparently accepts as genuine. He defends Freeman, writing: "Some critics have complained that Freeman should not be the only one finding all those tracks unless he is faking them. Actually some other people I know have found tracks there [the Blue Mountains], and many others may have as well, but they are just telling their friends about them and the information only later filters back to me. Freeman was also spending an inordinate amount of time in this effort before a foot injury curtailed most of his searching" (Krantz 1992a: 82).

Krantz offers no corroborating evidence that Freeman actually spent "an inordinate amount of time" searching for tracks. We do not learn who the "some other people" are that found tracks or anything about these tracks.[7] Krantz does not tell his readers that, besides the many footprints, handprints, hair samples, and encounters with Bigfoot, Freeman claims he also has: discovered twisted tree limbs (a sign of Sasquatch activity), photographed Sasquatch, and most recently, twice recorded Bigfoot with a video camera. Perhaps most curious is the omission of Freeman's find of ancient Indian cave paintings depicting Bigfoot. Surely one would think that an anthropologist would jump at such a discovery.[8]

MICHAEL R. DENNETT

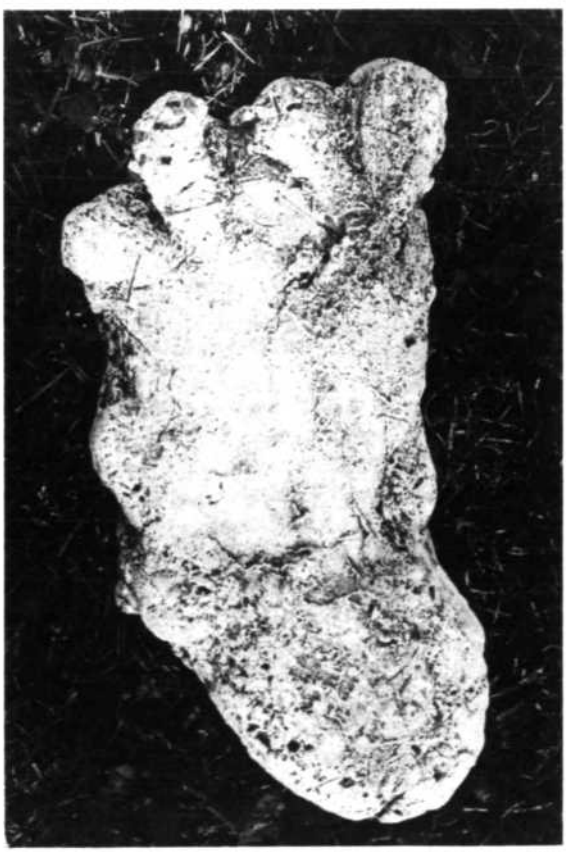
Five casts of tracks from the Indian Springs location. First four casts from front to rear are the four sequential footprints. Note the large bulge of the big toe on the top left of prints one, three, and four.

To shore up the sagging case for the Mill Creek tracks, another set of imprints showing dermal ridges would be helpful. Krantz (1992a: 85-86)

informs his readers that just such a fortuitous discovery has occurred:

> I should mention the dermal ridges in the cast of Cripple foot. My casts were copies of the originals. I showed these to Ed Palma [a fingerprint expert]. He pointed out three patches where he claimed to see traces of ridge detail. I studied those places intently and saw absolutely nothing. Sometime later Rene Dahinden showed me the originals of these casts. In all three places that Palma had indicated I could now see a few faint ridges. Needless to say, this man's professional qualifications are outstanding.

For the full significance of the preceding paragraph, it helps to know the history of the Cripple footprint. Over a thousand tracks were discovered in November and December 1969, near Bossburg, Washington. One pair of footprints were cast. This set, including the right "crippled" foot, is the basis for Krantz's statement that it would be impossible to hoax. Many Bigfoot researchers are not so sure. At the heart of the story is Ivan Marx. Marx participated in the Tom Slick Bigfoot expedition in northern California (1958-1962). After termination of the search Marx moved to Bossburg. He was living there when the tracks began to appear. Although he did not discover any tracks, he was closely associated with several discoveries. Dahinden maintains that the tracks are worthy of consideration. In *Sasquatch* (Hunter and Dahinden 1975: 156), he says he was suspicious of the circumstances. "Why," he writes, "did the tracks happen to be just there, where [I] would be sure to go every day, where [I] checked all the time. . . . It was the obvious place for a hoaxer to plant his work." Suspicions increased when no additional legitimate evidence surfaced despite the obvious repeat presence of the creature. After the Bossburg incident, Marx produced a film of what he said was a large Sasquatch creature. The first film was followed by several more, and his credibility suffered. The Marx films have failed to gain any significant acceptance within the Bigfoot community. Even Krantz rejects the



MICHAEL R. DENNETT

One of the Bossburg, Washington, footprints, better known as the "Cripple foot."

Marx films. Writing to Dahinden in May 1975, Krantz (1975) says: "You are right about my falling for the Marx film, for a while anyway."

But Krantz lacks reservations about the Cripple foot. Until the Mill Creek tracks were discovered, Krantz maintained that, besides the Patterson film, the Cripple-foot tracks were the best evidence for Bigfoot—the best evidence *because* his analysis established the tracks as genuine. Now he tells us the Cripple foot shows dermal ridges.

I called Dahinden, who has the original Cripple foot cast, and asked him if he saw dermal ridges. He told me that there were two small areas that *might be interpreted* as dermal ridges. He added that if they were ridges they could be artifacts of a human hand transferred to the cast before the mold was completely dry. A few weeks later I examined the original myself. Using a magnifying glass I studied the entire imprint. I was unable to discern any dermal ridges.

Krantz's claim of anatomical precision in the shape of the Cripple foot also calls for examination. I contacted Dennis Trune, an anatomist and an associate professor at the Oregon Health Sciences University. Trune had been intrigued by an article by Krantz and had contacted him in 1988. Trune (1988) told me that Krantz "knows his anatomy, is well read on its anthropomorphic ramifications, and his theorizing is not bizarre." Still, he questions Krantz's approach. "I find it difficult to believe," Trune wrote, "that one can tell the location of the ankle (tibio-talus) joint, which is on the top of the foot, from imprints of the bottom of the foot." He continued, "Frankly, I never could make out what he was calling the ball(s) impressions from the photograph because he doesn't label the picture." Trune concludes: "His [Krantz's] writings don't do anything to prove Sasquatch one way or the other."

The Krantz approach to Bigfoot research is to verify "evidence" for the creature through anatomical analysis. He presents his analysis as objective fact. Another pattern in his approach is to accept multiple items of "evidence" from the same person. In 1970 when Marx "discovered" several Sasquatch handprints, Krantz (1971) found the anatomy consistent with a Bigfoot creature. Now, in his most recent book, he presents a second series of handprints, found by Freeman. Krantz (1992a: 66) writes: "The gross anatomy of the handprints shows one feature of special interest because it was almost totally unexpected. The five available casts, representing four individuals from two locations, all show a nonopposed thumb."

The conclusion that the Sasquatch has a nonopposed thumb must be viewed as an extraordinary development.[9] Krantz gives no indication that he has support from other scientists for his analysis of the Marx and Freeman handprints. Explaining why he thinks the handprints are real, Krantz (1992a: 66-67) says: "The combination of a nonopposed thumb with the absence of a thenar pad is anatomically consistent. If this is a hoax, the perpetrator had to be very familiar with a variety of primate hands, most of which do have opposed thumbs and thenar pads, while some are lacking both. And this is above and beyond all the other physical problems of producing such fakes."

I sent Daris Swindler, professor emeritus of anthropology at the University of Washington, a copy of the chapter on handprints. Swindler is an expert in primate anthropology. Later I talked with Swindler (1993) and asked him what he thought about the handprints and the aspect of the

nonopposed thumb. He replied: "I don't know what he's talking about!"

Concerning the handprints, Krantz allows the possibility, however slight, that they are not authentic. There are at least three sets of footprints that he insists cannot be fakes. These are the Cripple foot (1992a: 63), he says: "In my judgment, no hoaxer could have figured out just how far forward to shift the ankle for a biped of the indicated size, then have left footprints with some subtle distortions that just *might* lead an anatomist to the reconstruction I made. I figured the whole thing out after studying the footprints; any hoaxer had to plan it all out from nothing. This requires an expert anatomist with a very inventive mind, more so than me, and I seriously doubt that any such person exists."

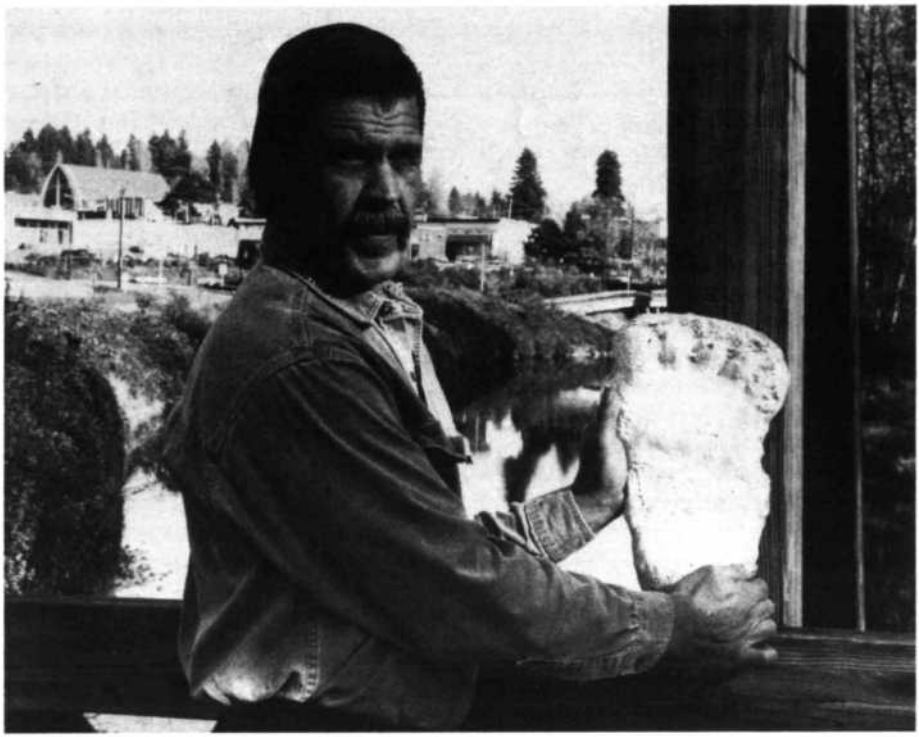
When the Mill Creek tracks were discovered, Krantz made similar claims of authenticity. He added that there were two Sasquatch traits visible in the Mill Creek tracks that verified they were genuine. He chose to keep these two traits secret to distinguish future real tracks from fakes.

Krantz (1992a: 84) writes that, in May 1990, "a construction worker sent me a cast from southern Indiana. This was the first tangible evidence from east of the Rockies that I have been able to examine first hand. Bob Titmus, who is very alert to the possibility of faked tracks, studied this one carefully and decided it had all the signs of a legitimate imprint from a living foot. I also brought the cast to the San Diego Police Department, where Ed Palma and his colleagues pronounced the several patches of ridge detail as consistent with a real primate foot of that size, almost 14 inches long (35 cm). They all agreed that no human foot could have made that imprint. It also showed the two sasquatch traits that I have never revealed to anyone." Later in the book (Krantz 1992a: 200) he again mentions the Bloomington track, stating: "It was examined by the tracker Bob Titmus, and the fingerprinter Ed Palma, the two best experts available, and both thought it looked genuine. The track also passed all my criteria, published and private, that distinguish sasquatch tracks from human tracks and from fakes."

The Bloomington track, if real, is a valuable item of supporting data for the Mill Creek tracks. In the Bloomington track we see all the elements that, to Krantz, guarantee authenticity: his analysis of the anatomy, corroboration from a fingerprint expert, and the endorsement of a tracking expert.

I was surprised when I first read the passages above quoting Titmus, as I knew that he was skeptical of both the Mill Creek and Cripple-foot tracks. Yet Krantz never mentions in his book that one of the "two best experts available" does not endorse his two most important pieces of evidence.

I contacted Titmus and asked him about the statements attributed to him concerning the Bloomington track. He agreed to an interview but asked that I identify him not as a skeptic but as having seen positive evidence for Bigfoot. Titmus (1993) then told me that the quotes in the book were probably literally true.[10] At the time, he did not see anything wrong with the cast but he stressed that *no conclusion of authenticity could be made from a single footprint*, even if the print could be viewed where found! The statement that "he agreed that no human foot could have made [the] imprint" was possibly misleading. He said that if the track was a fake it would have been made by hand, not by using one's foot. He



MICHAEL R. DENNETT

Cliff Crook, a longtime Bigfoot buff, holds a copy of the Bloomington track. He doubted the track was authentic.

added that he did not claim to be an "expert." Looking at the photo in his copy of the book as we talked, he said, "I'm a little suspicious of the appearance of the toes."

Titmus (1993) told me that the Mill Creek, Cripple-foot, and Marx and Freeman handprints were "probably the worst evidence for Bigfoot." He said he was "positive the Freeman handprints were fake and that he had grave doubts about the Marx handprints."[11]

I also talked with Ed Palma. Palma is the "expert" who allegedly spotted ridge detail in the Cripple-foot print. Asked about the Mill Creek Sasquatch tracks (Palma 1993), he said he felt they were authentic. He agreed with Krantz that the tracks could be tagged as real, independent of any other data. He recognized there were ways a track with dermal ridges could be faked. In the case of the Mill Creek tracks he felt faking was highly unlikely. He told me that of all Sasquatch tracks he has examined he was unable to identify any as positively fake. When asked specifically about the Bloomington track, he said he could not remember the details of that specific imprint. He said that he was certain of the authenticity *only* of the Mill Creek tracks. He added, "I wouldn't say I can't be fooled."

What of the anatomy of the Bloomington track?

Krantz assures us the track "passed all my criteria" including the "two sasquatch traits that I have never revealed to anyone." Since we do not know what these "two traits" might be, it is difficult to imagine how one could evaluate the professor's asser-

tion of authenticity. It occurred to me that one other person might be able to give information regarding the track: the unnamed construction worker who sent the cast to Krantz.

According to Krantz (1992a: 85) "The man who sent this Indiana track provided me with only a brief description of the footprint circumstances, and has since moved to an undisclosed location. He indicated that he wanted nothing more to do with the 'damned thing,' and cannot be reached for any further communication on the subject." Through my contacts I learned that the cast had been sent to Krantz by J. W. Parker. Parker had moved to another state and he did not want anything more to do with the cast. Krantz was almost correct when he asserted that Parker "cannot be reached."

After an eight-month effort, I was able to talk with Parker, then living on the East Coast. He told me the footprint was a fake. He knew this because he had made the imprint and the cast! Originally he had intended only to see if Krantz could, as he bragged, "differentiate between [a track] made artificially or naturally." Parker said he now feels the thing has gone too far and regrets he made the [Bloomington] track. I asked how it had been made. "It took about twenty minutes to form the print in the mud," he said. The dermal ridges came from his foot and hands, placed in areas where the "least amount of wear or abrasion would occur." What about the "two traits"? "Oh," Parker replied, "I wasn't sure about that. I thought they might be toenails and scars, so I added both." Parker also told me he made "the ball of the foot appear deeper near the inside of the foot to simulate the weight-bearing area during a light push-off." At the last minute, he embedded the shell of an American black walnut where the fifth toe would have been to make the print look more realistic.[12]

Throughout my investigation into the Bloomington track I received help from many people who think there is a Sasquatch. Most of these "researchers" feel other "evidence" provides better support for the existence of the Bigfoot creature. One of these, Cliff Crook (1993), summed up the issue: "Science is about discovering the truth. It is evident that Grover Krantz has consistently abused his scientific credentials by his constant failure to acknowledge plain facts."

Notes

1. Krantz (1983: 71-72) writes: "Thus far, every specialist who has examined these casts [Mill Creek] agrees that their detailed anatomy has all the characteristics and appearance of being derived from an imprint of primate skin. These include thirty police fingerprint workers, . . . six physical anthropologists . . . four pathologists and two zoologists."

2. In that article I quoted Dahinden as comparing the Hitler diaries scam to the Mill Creek tracks. In quoting him I wrote: "It turns out that the ink was not invented until 1954." In fact, it was a discrepancy in the paper, not the ink, that proved the diaries fake. This was my error, not Dahinden's. I also reported I had been told that Freeman had once worked for an orthopedic-shoe company. At the 1989 International Society of Cryptozoology (ISC) meeting Freeman told me he had never worked in the shoe industry. Later when I asked him to release a government employment file, which could have substantiated his denial, he declined. In fairness I should add that despite considerable effort, I was never able to verify this employment with any custom shoe firm.

3. For more information on this issue, see Winn 1991: 55-65.

4. See also Somer 1987: 65-70.

5. Ray and Derek Nab were also present at the time. I talked with Ray Nab and he collaborated Dahinden's account of the find.

6. For a favorable account of Freeman's discoveries, see Orchard 1993.

7. One of the "other" people finding Sasquatch "evidence" in the Blue Mountains is Wes Sumerlin. In addition to encounters and footprints, Sumerlin is reported to have seen a giant UFO and experienced "missing time" while looking for Bigfoot in the Blue

Mountains. Considering the size of the area encompassing the Blue Mountains, the number of sightings have been few. In contrast, a Pennsylvania Bigfoot group reports 100 Sasquatch incidents involving 250 eyewitnesses in their state in a single year!

8. I learned of the alleged discovery of the Indian cave paintings in a telephone conversation with Paul Freeman (1990). At the time he complained to me that he could not interest anyone in examing the paintings. According to one account (Orchard 1990: 117), Krantz said the pictographs were "just something that cannot be evaluated." Freeman says he also found "scratch" marks, Sasquatch feces, and "a section of an elk hide with huge teeth marks embedded in it" (Orchard 1990: 159).

9. Krantz (1983: 76) argues that Sasquatch must be a "higher primate" because of the dermal ridges. "The skin [showing dermal ridges] makes it [Bigfoot] a higher primate, without specifying monkey, ape or man." If Bigfoot is a higher primate then the nonopposed thumb seems to this writer to be an incredibly unlikely anatomical configuration.

10. In my discussion with Titmus he said that he did not want to be represented as a Bigfoot skeptic even though he was skeptical of the particular evidence I was researching. Titmus said he was convinced that Bigfoot exists. On at least a dozen occasions, he said, he had been able to track the elusive creature. He explained that the tracking had been of different individuals often for a mile or more. In one instance he tracked a creature for 3½ miles before losing the trail. Titmus also mentioned the Patterson film as authentic, as well as his personal sighting of a Sasquatch on two occasions.

11. Krantz never mentions Titmus's conerns regarding the key footprints or the Marx handprint. However, he writes: "In the late 1980s Paul Freeman brought in some casts of hand imprints from the Blue Mountains. His description of the circumstances that he gave to Bob Titmus was rather different, which has raised some concern about their authenticity."

12. I learned about Parker from two Sasquatch investigators: Doug McCoy and Art Kapa. They said Parker had told them he had made a fake track and sent it to Krantz. The same year, 1990, Parker showed them a letter from Krantz acknowledging receipt of the track. I later obtained a copy of the letter. They related that Parker had subsequently telephoned and had identified the track as the one in Krantz's book. They said they were unable to give me Parker's address. I finally contacted Parker by phone on August 29, 1993.

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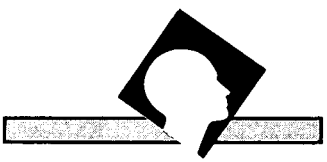
Why We Are Unmoved As Oceans Ebb and Flow

PAUL QUINCEY

"The moon moves the oceans, our bodies are 70 percent water—what must the moon be doing to our bodies?" This sort of question frequently crops up in the context of possible lunar influences,[1] and it deserves a well-reasoned reply. The short answer, "Very little indeed," is quite hard to justify in only a few words, and this can lead to dismissals that fudge the real issues. Apart from the sin of obscuring the truth, it is a shame to miss an opportunity to explain a piece of science of widespread interest.



If you think your body might be feeling the forces that cause the tides, think again.

A Brief History of Tides

The tides have had a rather special place in the history of science. On the purely practical side, the ability of seafaring people to predict times and heights of high tide is extremely valuable. Tide patterns can be complex, but prediction is always possible for any particular place just by carefully analyzing records of past tides. Such an analysis must have been an early instance of patient observation yielding useful knowledge about the physical world. Ancient civilizations undoubtedly noticed a link between tides and the moon, both its position in the sky and its age in the month.

From a more theoretical viewpoint, this astronomically connected movement of the sea begged for a scientific description, and some of the greatest names in science—Kepler, Galileo, Newton, Kelvin, Darwin (George Darwin, the son of Charles, the naturalist)—have applied their minds to the subject. Today, accurate tidal predictions are available in great annual tables for hundreds of coastal sites around the world, and it would seem that the tides have respect-

fully yielded all their secrets. Actually, these tables are still made by extrapolating from past records, and theory has only been able to add sophistication to the old method.

It is not yet possible to generate good tide tables starting from first principles, not because there are any fundamental problems with the theory, but because this would need extensive surveys of the seabed, together with truly formidable computing power. As perfectly good tables can already be made, this exercise has hardly been seen as one of the key problems of twentieth-century science. An unfortunate consequence of this state of affairs is that tidal theory has become something of a backwater, poorly understood by the general public and probably most scientists. Before we consider the effects of tidal forces on people, though, we need a decent understanding of why the seas respond as they do.

All You Need to Know About Tidal Forces

Tidal forces, the basic cause of tides, were first outlined by Isaac Newton in his mighty work *Principia*. Their simplicity, as a natural consequence of Newtonian gravity, belies the complexity of the real tides that result from them. We can thus also admire Newton's skill at picking convenient examples to illustrate his theory, while leaving a mass of inconvenient data for lesser mortals to explain.

The forces are best described with a few diagrams.

If we represent the strength and direction of gravitational force with arrows, Newton's inverse square law means that the forces around a sphere, such as the sun, vary like those in Figure 1.

If we place another sphere, such as

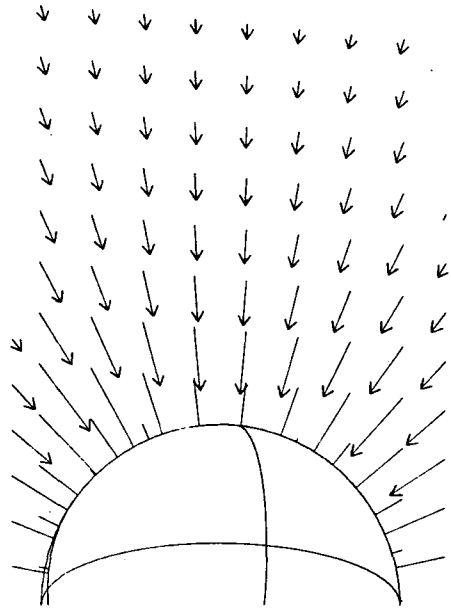


FIGURE 1. The strength and direction of gravitational force on objects near a sphere, such as the sun. For clarity only one plane is illustrated.

the earth, some distance from the sun, the forces from the sun's gravity must vary slightly throughout its volume. This is shown in Figure 2. In particular, the near-side forces are larger than the far-side forces, and the forces are not quite parallel to one another.

Now the earth responds to the sun's gravity by orbiting around it; and because it moves as a solid body, the whole earth must move according to the average gravitational force involved. The average force, represented by the central arrow in Figure 2, is therefore what is required by every part of the earth to keep it moving in orbit. The earth's motion exactly matches this average force in the same way that an orbiting astronaut's motion matches the earth's gravity, leaving him weightless.

If we now plot the differences between the average force and the actual force from point to point, we

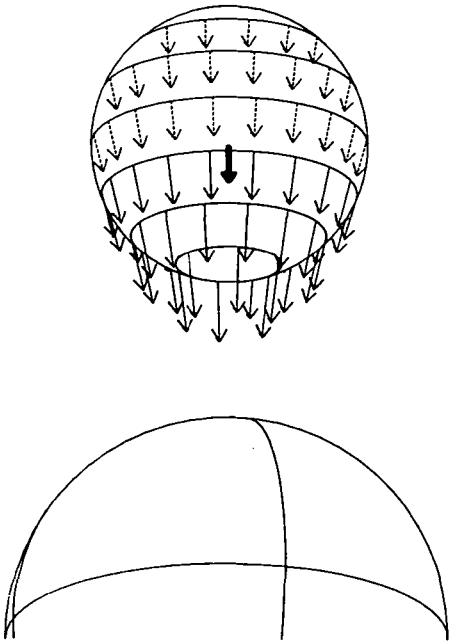


FIGURE 2. The gravitational forces on the surface of a nearby sphere. The average force throughout the sphere is represented by the large central arrow.

are left with much smaller residual forces that tend to distort the earth rather than move it. These residual forces are the tidal forces, and they form a sort of lemon-shaped pattern, like that in Figure 3.

The same diagrams and reasoning apply to any two celestial objects, the size of the tidal forces on one body being determined simply by the mass and distance of the other. It turns out that the moon creates tidal forces on the earth roughly twice as large as those from the sun, while no other object ever causes tidal forces on the earth remotely as large as the moon's or the sun's. We can imagine, then, as the earth turns, one lemon shape aimed at the moon and a smaller one aimed at the sun. From the earth's point of view, the larger one swings around every 24.8 hours and the smaller every 24 hours, but as the two ends of the lemon are very similar the cycles are effectively 12.4 and 12 hours long.[2]

The forces are best regarded as local variations to the earth's gravity—everything's weight varies slightly, and the vertical (as defined by a plumbline) swings a little to and fro. It is worth pointing out explicitly that water is neither more nor less subject to tidal forces than, say, apples or granite, and that there is no need for a more mysterious affinity to the moon than straightforward Newtonian gravity.

A Naive Theory of Tides

There is a tempting line of thought that runs like this. With tidal forces as they are, the earth will assume a slightly lemony shape. The solid earth will distort a little, but the oceans, being more mobile, will move much more. There will then be two bulges of water traveling westward around the earth with the moon, causing tides every 12.4 hours. The sun will produce smaller bulges, which reinforce the main tides at full moon and new

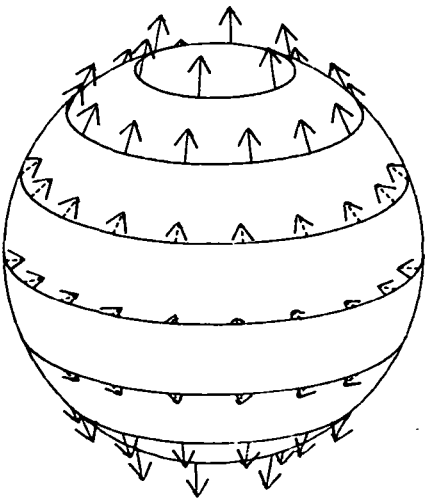


FIGURE 3. The pattern of tidal forces (the differences between the actual force and the average force) on a spherical body.

moon (spring tides), but reduce them at half moon (neap tides).

This view is very satisfying, as it correctly describes the main features of real tides in many places. It is also profoundly wrong, for at least one obvious reason. Imagine one of the water bulges moving westward across the Atlantic Ocean. What would happen when it meets America? It would not travel overland to resume its journey in the Pacific; nor would it turn sideways, rushing along the coast to find a way through and keep to its westward schedule. It would do what any ripple in a pond would do: bounce back. So we suddenly have our bulge traveling the wrong way, ready to interfere with the next one coming along, and indeed the echoes from many earlier bulges. In short, the continents get in the way so much that the two-bulge picture is a nonstarter.

A More Realistic Theory of Tides

The bad news is that at this point we must abandon hope of an elegant description of real tides. The good news is that computers have been invented; therefore, when we ask "How would this ocean respond to these forces?" we can feed numbers and hydrodynamics equations into a computer and let it work out an answer. We also have a huge amount of information about tides at specific places, which, after all the theorizing, is what we need to compare with our answer to see if our idea is any good.

For the most elementary model, we can pretend that the tides repeat themselves exactly every 12.4 hours, which is not so far from the truth and makes the situation much more manageable. We then describe the shape and the depth of the earth's oceans as closely as possible given the capacity of the computer. Depth is very important, as it determines the speed at which waves of tidal water tend to travel. We remember that the earth's rotation will affect movements of water (via Coriolis effects).

Figure 4 shows one such result, taken from a paper by Parke and Hendershott (1980). You will notice that there are many "bulges" of water giving rise to local high tides and that they are moving in various directions. This is completely different from the naive version, but it does not change the recurrence of local tides in the same 12.4-hour interval. Moreover, the sun is still likely to increase the size of the tide around full moon and new moon when it reinforces the moon's tidal force, so we still have spring and neap tides. But we can see that in general things will be complicated, as indeed they are.

Such a model can be checked against data for islands in mid-ocean, but mainland sites are more difficult because shallow water slows and alters the tide in a drastic way. This result, then, is rather crude, but it is at least a realistic approximation to tides in the oceans.

It is good enough to make an important observation. The pattern of the tides in the ocean is almost completely unlike the pattern of forces creating them, because the continents prevent the simple lemon-shaped response. The tidal forces may as well be banana- or pear-shaped, because the oceans never have the chance to move accordingly. For any confined object on the earth's surface, and that could be an ocean or a person, the overall pattern of forces spanning the globe is largely irrelevant. From the object's point of view, the relevant feature is how the local force changes in time. Oceans feel the tidal forces as a succession of regular nudges, and the tides arise from the set of standing and traveling waves that these create.

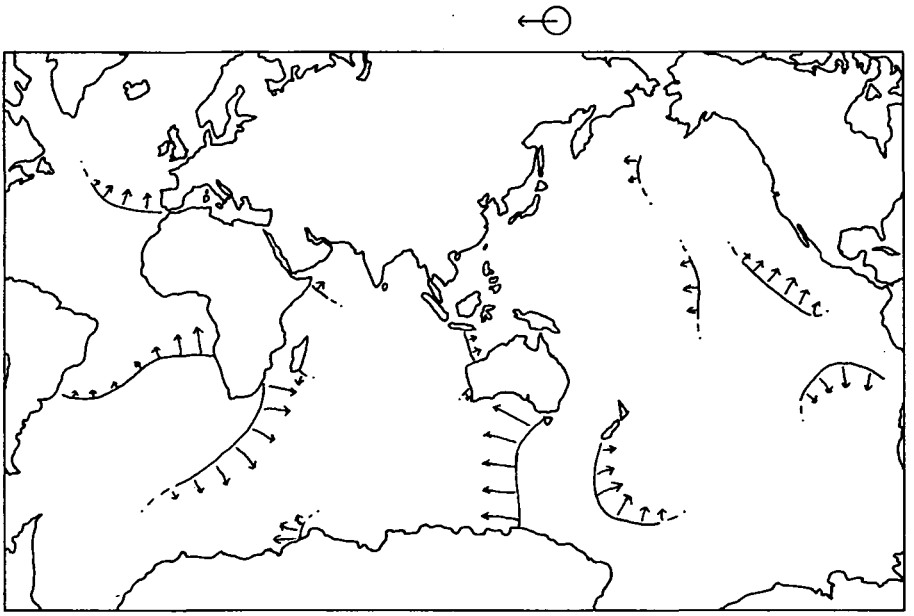


FIGURE 4. The calculated distribution of high water ridges in the oceans at one particular time during a 12.4-hour tidal cycle, taken from Parke and Hendershott 1980. The circle above the map shows the position of the notional moon.

Tidal Forces on People

We have already seen that there is nothing special about water in tidal theory—everything feels the same tilting and weight change. We can easily put numbers to these forces: in the most extreme case, an object's weight will be 0.000035 percent less when the moon is overhead than when the moon is on the horizon (Cook 1964: Chap. 6), and in the course of the tidal period the "vertical" will change by no more than 0.00001 degree (Darwin 1901: 100). That is all there is to it.[3] When you consider the weight change we experience during a meal (about 1 percent), as we move from place to place on the earth's surface (about 0.5 percent), or as the weather changes (about 0.03 percent), it is no wonder that we don't notice the first aspect. It is perhaps even harder to contemplate a way for our bodies to notice the tilting—to somehow remember that we tended to lean over by a few millionths of a degree 6 hours ago, while constantly moving about in the meantime. It would be utterly implausible to expect a living creature, or any organ within one, to detect tidal forces directly.

Why Are Tides So Big?

At this point you may have a nagging thought: if the relevant forces are really *that* small, why is it that the oceans move so much? What makes the oceans so different from people if the changes in weight and the tilting are the same for both?

The obvious difference is simply size. This makes no difference to the weight change, but a big difference when it comes to tilting. If we tilt a teacup by a few degrees, the tea will rise up the side by a few millimeters, but if we could tilt the ocean by the same amount, the rise would be

enormous. This is true, but it isn't the whole answer. For a start, the maximum rise and fall would still be less than 1 meter (Proudman 1953: 276), and tides can be larger than that, even away from the complication of continental shelves. What is more, we have seen that the tides do not simply follow the tidal forces—if the oceans do not form two bulges they cannot be tilting backwards and forwards on cue. The fact that the oceans are not able to respond to the tidal forces in the most direct way suggests that their movement should be much less than 1 meter.

The real answer lies in resonance—the situation where an object with a natural (or resonant) frequency is moved by a force that varies at a similar frequency. They may seem slow by human standards, but oceans have natural frequencies at which they will rock backwards and forwards, or swirl around (when the rotation of the earth introduces Coriolis forces), after they are disturbed. The frequency is fixed by the depth and "length" of the particular ocean. If we look at the two broad types of open sea, above and outside the continental shelf, the respective depths are roughly 100 and 4,000 meters. The length scale at which they resonate with a period of 12.4 hours is roughly 4,500 km in the deep ocean and 700 km on continental shelves.[4]

These distances are remarkable, in that they are moderately close to some real sizes of ocean and continental shelf, while there is no particular reason that this should be so. When the tidal forces resonate with an ocean's natural frequency, we would expect a large response. In practice, some deep oceans are close enough to resonance with the tidal forces to produce large oceanic tides in some places. This can only be put down to coincidences linking sizes and depths of seas to the length of the day, and they are coincidences that give us the large and interesting tides that we have. The largest tides occur when coastal features are close to resonance with the oceanic tides and so greatly amplify them.

Back to Bodies

There remains one tantalizing loose end. If the oceans can have large tides because their resonant frequencies make them especially susceptible to tidal forces, maybe human bodies can resonate in some way. Unlike the ocean resonance this need not be fortuitous, as we could thank evolution for developing such a resonator if it brought suitable advantages to living creatures.

Well, what would this resonator need to be like? There is a simple test. To confirm that a bell resonates, you hit it and it rings. To confirm that the oceans resonate, you can wait for an earthquake and see if the disturbance dies down in oscillations. To see if any part of the body resonates with tidal forces, you give it a push and see if it wobbles with a period of 12.4 hours. There is no known organ, gland, or arrangement of parts in the human body that behaves remotely like this.

In any case, we have seen that tidal forces for people are swamped by other forces nearer to home and by our own movements, which makes the resonance idea inherently less feasible than in the oceans. To cap it all, the energy available to a resonator from tidal forces will depend on its mass. In the case of the tides, the resonators driven directly by tidal forces are the deep oceans—for a human being the energy involved is entirely negligible. And last but not least, there is no good evidence that people actually do respond in any way to tidal forces.

The Answer

Finally, then, a brief reply to the question "What does the moon do to our bodies?" Very little indeed. The force that moves the oceans is a minute but regular tilting of the vertical, no more than one hundred-thousandth of a degree. The moon emphatically does not "pull on water." Oceans move because their size makes the tilting more noticeable, and because the repetition time (12.4 hours) is by chance quite similar to their natural resonant periods. People are too small, nothing about us likes to wobble that slowly, and our bodily fluids are free to carry on regardless.

Notes

1. Strangely, lunar tidal forces are often invoked to explain monthly rhythms, when the tidal rhythms are essentially twice-daily and twice-monthly. The moon may well have established a monthly influence on nocturnally related activities, as illumination at night changes dramatically through the lunar month, but that does not concern us here.

2. Some explanations state that only the near-side end of the lemon shape arises for gravitational reasons, while the far side is due to centrifugal force caused by the motion of orbiting. This idea is transparently false, but that has never been sufficient reason for an idea to fade away unassisted. As far as I know, the explanation was first put forward by Oliver Lodge (1893: 364) late in the last century.

3. It is usual when discussing tidal forces on people to consider "direct" tidal effects, that is, distorting forces similar to the lemon-shaped ones on the earth, rather than weight changes and vertical changes. These "direct" forces are *extremely* small. For a person standing under a full moon they amount to a redistribution of weight roughly the equivalent of moving a single bacterium from the person's head to his or her feet. We are subject to similar "distortions" from terrestrial objects that are 10 million times larger than this; we don't notice them either, so it seems safe to ignore the subject.

4. For the sake of illustration I have used the formula:

$$\text{resonant length} = \sqrt{(gd)}/2f$$

in both cases. $\sqrt{(gd)}$, where d is the depth and g is the acceleration due to gravity, gives the wave velocity, while f is the frequency. The resonant length is thus half a wavelength.

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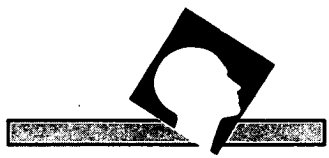
Scientific Investigation of Anomalous Phenomena in Kazakhstan

SERGEY EFIMOV



Enormous popular interest in anomalous phenomena and UFO contacts has been unleashed in the former Soviet Union. Scientists in Kazakhstan formed KCIAP to apply scientific methods to investigating and evaluating claims.

Probably, in the not too remote future, the Soviet perestroika will be a subject of interest not only for political scientists but also for psychologists and specialists in paranormal phenomena. While the radical political and economic reforms were happening in 1985-1992, the Soviet people's general outlook also changed. Belief in the supernatural invaded a country of atheists with undeveloped critical thinking.

When the 1980s began, the Soviet people had very little information about paranormal phenomena. There were sometimes vague rumors about "flying saucers" or telepathy. But the majority of people did not consider these seriously, and newspapers, as a rule, kept silent. At that time any publication about the paranormal was possible only with the permission of the USSR Academy of Sciences. This meant almost absolute prohibition, for the small USSR Academy of Sciences Expert Group could not cope with a stream of reports on the paranormal (and, in my opinion, did not make serious efforts to do so).

The academies of sciences in the Soviet republics didn't carry out research into the paranormal. As far as I know, there was no formal prohibition of these investigations, but they were not considered a serious matter. People who tried to deal with unusual phenomena (even from the rational-critical position) were reputed as cranks. The majority of Soviet scientists considered UFOs to be atmospheric phenomena (halos, meteors, and so on), and the "saucer boom" abroad to be the consequence of a cap-

italist crisis.

That was the situation before 1988. There were witnesses of unexplained (for them) phenomena, who were ready to believe in any explanation, including a marvelous one. And there were scientists, who were not ready to discuss these phenomena. But the Soviet perestroika had a surprise in store for both the former and the latter.

During the time period from late 1988 to early 1989 the sensational information about alleged crashed "flying saucers" in the United States (mainly about the Roswell incident) and supposed numerous contacts with extraterrestrials aboard was published in the Kazakh SSR newspapers. This information "from foreign sources" was reprinted from Moscow and Leningrad newspapers. These articles had the effect of an exploding bomb. For the first time such information was given without the prudent scientists' comments, and the extraterrestrial visits were described as doubtless reality. Therefore many people (who had not been accustomed to perceiving newspaper articles critically) came to believe in the "reality" of these reports.

You can remember how that time was. Almost every month people in the USSR were uncovering for themselves new details of their own life and history: Stalin's concentration camps, collectivization, government privileges. And the reports on crashed "saucers" were perceived as one more achievement of Glasnost. [See Paul Kurtz, "Paranormal Pandemonium in the USSR," *SI*, Spring 1990.]

It was a most difficult time for

skeptics. Of course if we were asked, we said that such super-sensations should be discussed in the scientific journals (but that did not occur) and that the information in the newspapers might be far from reality. These, however, were only general responses. At that time we had to counter the claims' "facts." Only in April 1990 did the information about Philip J. Klass's UFO investigations penetrate into the USSR. But that was more than one full year later.

In May 1989 censorship of reports on the paranormal was completely abolished. The newspapers ever since have been filled with information about UFOs, poltergeists, ESP, and other "miracles." The eye-witnesses of the unusual phenomena united and tried to carry out some investigations.

In mid-December 1989 the now-notorious mass observations of UFOs took place in Alma-Ata. These events helped unify all research groups. On January 4, 1990, the Kazakhstan Committee on the Problem of Holonic Systems (CPHS) was founded, and on January 10 the "Hypothesis" club was also founded. It was suggested that the club should be the mass public organization, and the CPHS the union of scientists. V. M. Injushin (the holder of the chair of biophysics at the Kazakh State University) became the head of CPHS.

In the beginning of February 1990 Michail Sergeevich Yeltsin, the leader of SAKUFON (the Russian abbreviation for the Middle Asia Board of UFOlogical Sciences), visited Alma-Ata. Yeltsin, a journalist-UFOlogist from Frunze (now Bishkek, the capital of the Republic of Kirghizstan), delivered several lectures trying to convince people that there was an undeclared war on Earth between the extraterrestrials and the military men and politicians. As confirmation of this thesis he displayed some supposedly foreign materials: photos of supposed UFOs and reports of crashed "saucers" and UFOnauts who were said to have been taken prisoners.

On February 8, M. S. Yeltsin met with the CPHS members. He promised them an exchange of the data on UFOs and the latest information from abroad, without any restrictions on CPHS activity if they would unite their efforts. After some discussion, this proposal was accepted. As Kazakhstan geographically does not belong to the territory of Middle Asia, this new organization was named SAKKUFON (the Middle Asia and Kazakhstan Board of UFOlogical Sciences).

The CPHS existed for only six months. The Committee organized the All-Union Conference on Holonic Systems Problems (Alma-Ata, April 12-13, 1990), at which a wide range of paranormal phenomena were discussed. But internal conflicts, differences in approaches to the methods of investigation of the unusual phenomena (ranging from the classical scientific methods to their absolute negation), led to CPHS's disintegration. After the summer of 1990 CPHS did not meet anymore.

In the fall of 1990 a number of independent groups were formed. On November 30, the Alma-Ata skeptics also decided to officially set up an organization. The Kazakh SSR Academy of Sciences Commission for Investigation of Anomalous Phenomena (KCIAP) was formed. Its activity is regulated by a charter that states, in particular, the following:

> 1. The Commission . . . provides the all-round investigation of the reports on anomalous phenomena (i.e., unusual reports that cannot be explained by modern science from a standpoint of a witness). For all this KCIAP applies mainly modern scientific methods. Other results

"In May 1989 censorship of reports on the paranormal was completely abolished. The newspapers ever since have been filled with information about UFOs, poltergeists, ESP, and other 'miracles.' "

obtained using "nontraditional" methods may be applied only "with a deliberative vote."

2. Two main principles of our work are: (*a*) Tolerance to any opinions, conceptions, hypotheses. Inadmissibility of unfounded accusations toward whoever it may be. All assertions should be argued. (*b*) "Occam's razor" or "miracle absence presumption": if there are several versions of an explanation of a given phenomenon, we prefer the version of explanation by means of already known processes and phenomena.

The term "anomalous phenomena" includes UFOs, poltergeists, ESP, and many others. However, considering the makeup of our group—astronomers, physicists, and psychologists—it can qualitatively examine only phenomena in which people claim to have had some interaction with alien intelligence. It quickly became clear to KCIAP that to get strict evidence of such events is very difficult. All visual observations of UFOs are subject to numerous errors. The photos of UFOs and dowsing inspection of "saucer landing" spots may also be subject to errors. Material "UFO fragments"? There are still military secrets. We cannot be sure that alleged "matter of extraterrestrial origin" has not been produced instead in the secret military laboratories. Perhaps the only chance to prove contact with alien civilization is to get information from it.

Of course, not just any information would be suitable. It should be verifiable and must almost completely exclude the probability of an occasional coincidence of data obtained by the contacters and the reality. In October 1990, through the republic newspaper *Leninskaya Smena* (circulation more than 300,000), I suggested that all "contacters" should predict the appearance of ten new comets that will be discovered in the next year. Namely, a day, an hour, and the minute when each comet will pass the perihelion. Since astronomers cannot predict the appearance of new comets, both test conditions are satisfied. Moreover, the "comet test" sidesteps one technical argument, put forward by the "UFO enthusiasts": that verifiable new information may induce some governments to create new destructive weapons. The information about comets is rather safe for our civilization.

Since October 1990, about two years had passed. During this time the "comet test" had been published in the republic newspaper three more times. Nobody was able to get the right information. I suggest to all investigators dealing with "contacters with alien intelligence" to use the "comet test" in their work in order to differentiate genuine contacters (if they were to exist) from those whose "contacts" are induced by internal psychological reasons.

During the period from 1988 to 1994, KCIAP checked up on a number of cases of anomalous phenomena, investigated some photographic special effects that produce "photos of UFOs," and sponsored lectures.

"I suggested that all 'contacters' should predict the appearance of ten new comets that will be discovered in the next year. Namely, a day, an hour, and the minute when each comet will pass the perihelion."

KCIAP now has information about some one hundred cases of UFO observations in Kazakhstan and is preparing a computer catalogue of such events. KCIAP is not a big group (about five active members, and about ten others taking part occasionally).

And what about other groups? The staff of the biophysics chair of the Kazakh State University continues to carry out investigations of psychic healing. But the healers themselves are very reluctant to undergo any tests. They begin to practice healing people without any preliminary examinations of their alleged extrasensory abilities. All formal obstacles may be easily avoided: newspapers often report that anybody can simply buy the certificate of a healer for several thousand rubles. The state control of healers now is extremely ineffective.

In Alma-Ata there are also some theosophical groups that propagandize Madame Blavatsky's doctrine and Eastern philosophy. There are astrologers and their unions. There are groups that make efforts to unite nontraditional branches of knowledge (for example, "the mathematical synthesis") with philosophy and healing. The "Hypothesis" club and the Kazakhstan branch of SAKKUFON continue their activity. There are similar groups in Karahanda, Chimkent, Petropavlovsk, and some other towns in Kazakhstan.

Since 1990 the ideas of UFOlogists and UFO-enthusiasts have undergone substantial changes. At present even enthusiasts believe only a small fraction of UFOs to be extraterrestrial spaceships. The unknown objects now are believed to be instead signs of supernatural forces, and an "experienced" UFOlogist can observe hundreds of such "signs" every day. Besides, some UFOs are considered to be the exchange of energy clots between Earth and outer space. Other UFOs are said to be the souls of the dead. As a result, there now exists a complicated "cocktail" consisting of the religious doctrines, noncritically assimilated scientific facts (for example, from the Raymond Moody books), and all the unknowns existing in the world. So, at the All-Union Symposium on Nontraditional Sciences (organized by V. Lenskij, September 26-29, 1991, in Alma-Ata) during the UFOlogical session a Christian prayer was read. After that the dowsers arranged for the appearance of the "energetical phantom" of Jesus Christ in the room.

I am aware of the viewpoint of Dimitry V. Kanashkin on paranormal beliefs in the USSR (*SI*, News and Comment, Summer 1991), but I would like to propose another classification of the inhabitants of Kazakhstan (and the former USSR) according to their attitude toward anomalous phenomena. I believe that all people may be divided into enthusiasts (fans), dilettantes, skeptics, and deniers.

The biggest group (more than half of the population) are dilettantes. They have no clear knowledge of scientific methods and don't actively investigate UFOs. Their viewpoint on

the paranormal is shaped by the mass media, discussions with their friends, and their personal experiences. Two to three years ago they believed in the existence of extraterrestrials, telepathy, new forms of energy, and so on. They hoped that powerful supernatural forces would make their lives easier. But time passed, no changes in their lives have been induced by supernatural forces, and now the dilettantes' attitude toward extraterrestrials is approximately the same as toward the Loch Ness monster: probably they exist somewhere, but they are of no practical use. Now many people treat newspaper information about UFOs, contacts, and other paranormal phenomena simply as interesting tales. However, the firm belief in ESP and astrology still exists due to the fact that these paranormal disciplines provide some positive effect (for example, a psychotherapeutic one).

The second group are enthusiasts. Most of them have encountered something they considered paranormal (UFOs, poltergeists, etc.). The firm belief that they have observed some inexplicable things makes some enthusiasts feel very special. These people do not accept scientific methods of investigation or appreciate their importance. Those who criticize the enthusiasts are considered by them to be "dogmatics," "not intelligent enough," and "not progressive." Compared to the dilettantes, the majority of enthusiasts regard as unthinkable the idea that they can commit errors. In the not too remote future this group of people (there are scientists among them) may mark the dawn of a new religion.

The deniers group consists mainly of scientists. They have neither the time nor the desire to investigate paranormal claims. They consider that the anomalous phenomena do not exist and think that all people who tell about their contacts with the anomalous are charlatans. The deniers are a good target for criticism by enthusiasts. Criticizing the "inertness and dogmatism" of official science, the enthusiasts are becoming more popular in public opinion.

The smallest group are skeptics. They regard as possible the existence of various phenomena that now are unknown to science (or cannot yet be explained), but they insist that all these phenomena should be scientifically grounded (proved). The skeptics do not deny unusual things; but they try to investigate the unusual, applying scientific methods, without anticipating the results of the investigation. It is an interesting hobby, because investigating some "anomalous" reports is like reading a detective novel. And although this group is not very popular in our country now, I think that if the existence of alien intelligence is ever proved, it will be by skeptics.

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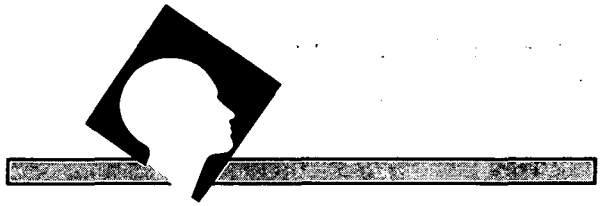
Book Reviews



For the Flying Saucer Myth, It Will Always Be January 1950

Watch the Skies! A Chronicle of the Flying Saucer Myth. By Curtis Peebles. Smithsonian Institution Press, Washington, 1994. 342 pp. Hardcover, $24.95.

ROBERT R. YOUNG

Opinion surveys consistently show that more than half of adult Americans believe that some UFO reports are caused by the visits of alien spaceships. (See "UFOs as ET Spacecraft? Belief Strong, Steady," *SI*, Spring 1992, by Kendrick Frazier). Yet, after nearly 50 years of widespread reports, claims, and investigations, there does not seem to remain one unequivocal example of such an event. What gives?

Aerospace historian Curtis Peebles has taken a meticulous look at decades of claims, investigative efforts, and public belief to put the subject into its proper mythic and folkloric context. He writes that a system of beliefs has developed from the interaction of the "believers," the government, and the society at large, and that it has become a living, still-changing thing. If so, we have not yet seen the final chapter of the flying-saucer myth.

This story has been outlined before, especially in "UFOs, 1947-1968," by Edward U. Condon, in *Scientific Study of Unidentified Flying Objects* (1969), and *The UFO Enigma*, by Marcia S. Smith and George D. Havas (1976, 1983), for the Congressional Research Service of the Library of Congress. Unhappily, these are now out of print; and more recently by Philip J. Klass in his 1990 CSICOP Conference address, "Gullible Travels in the Strange Land of UFOria," and "The Flying Saucer Subculture," by John A. Keel (*Journal of Popular Culture*, 8(4), 1975), available in a 1994 update from the New York Fortean Society.

I know of only two book-length efforts with the detail approached by Peebles. Both *The UFO Controversy in America*, an expanded doctoral dissertation by David M. Jacobs (1975), and *UFOs: A History*, by Loren E. Gross, an obscure, polemic series published in the early 1980s, were by believers and suffered accordingly.

Peebles is a skeptic who, judging by voluminous source notes, has managed to survey the skeptical UFO literature and the important works (47) by believers. In a crucial addition, Peebles had the benefit of what is now known about the early involvement of the FBI, Air Force, and CIA.

He reviews UFO precursors in 1890s "airship" sightings, 1940s European "ghost rockets," and science

fiction preceding the 1947 beginning of the saucer era. Peebles discusses how government investigations soon snagged themselves in controversy and civilian groups sought to force the government to reveal what they believed it knew. At first many suspected that the disks might be of Soviet origin. With the extraterrestrial hypothesis and claims of a cover-up, the myth came to embrace, as early as 1949, all of its most important elements.

They are all here: the "classic" cases, contactees, believers, great sighting "flaps," investigators, skeptics, and even the "real" aliens. Peebles shows how we search for a way to make order out of the world, using our experiences and myth to give order to things. We look for extraterrestrials, but in the end find only ourselves.

Loads of tidbits can be found in the 30 pages of source notes. While folks who get their UFO information from television and popular books might be impressed by current claims of crashed ET craft, few know how these urban rumors began. Peebles notes (note 54, p. 325) that the oft-cited origin of many crashed-saucer stories is the 1950 best-seller *Behind the Flying Saucers*, by Frank Scully, but adds that a 1949 film, *The Flying Saucer*, included many of the same story elements told to Scully by two con men. Peebles's most prescient observation is that "for the flying saucer myth, it will always be January 1950."

A 1961 UFO sighting by Betty and Barney Hill became, through publicity, the archetypical "UFO abduction." Peebles notes (note 3, p. 318) that years later, in the first serious attempt to solve the sighting, researcher Robert Sheaffer found that Jupiter was the apparent stimulus. Peebles wonders what would have happened to the future saucer myth if this had

been known early on?

I have only a few bones to pick with this admirable book. Peebles contends (p. 235) that with "abduction" reports the myth became separated from the flying saucer, itself. This may be accurate, but it is much too unequivocal to say: "Starting in the 1970s, people simply stopped seeing UFOs."

"Animal mutilations," which Peebles covers, are sometimes alleged to be preceded by UFO sightings. More than 5,000 UFO sightings in the Hudson Valley in the 1980s, often stimulated by the antics of unlicensed ultra-light pilots, have spawned many copycats. Sightings by buffs at the UFO hotbed of Gulf Breeze, Florida, and near U.S. military bases continue.

"Abductions" are sometimes said to be associated with sightings. Nowadays it seems that UFOlogists seldom expend energy trying to find answers to the sighting stimulus, but prefer to embrace the more exciting abduction scenario and the vicarious thrill of the abductees' stories. As Peebles points out, they have now bought into a much darker alien myth.

The book makes no mention of either "ancient astronaut" claims, popularized by Erich Von Däniken in the early 1970s, or "crop circles," also

hoax-driven and sometimes accompanied by UFO sightings. These would have illustrated how the saucer myth laid out by Peebles still incorporates the classic notion of visitors from above in all of its current guises.

The book contains no illustrations. This is disappointing for a subject that, in its most elemental form, is represented by "sightings" of things that puzzle the observers. A detailed discussion of some of the photographic hoaxes that have been widely used to represent "proof" for the reality of UFOs would have been invaluable. Illustrations would also have made this outstanding reference work more engaging for young people who have been brought up on TV, videos, and film.

The author summarized Air Force efforts by noting that of its more than 12,000 cases 5.6 percent were classified as unidentified. He does not break down the others, which would tell the reader the sorts of things that stimulated sightings. For instance, the Condon Report, which ended official Air Force involvement, concluded that for the years 1953-1965: 31 percent were astronomical, with Venus and meteors the most common; 18 percent were aircraft; 9 percent were balloons; 9 percent were satellites; 14 percent were other causes; 17 percent had insufficient data for analysis; and 3 percent were unidentified.

These are minor defects in a terrific work. I expect it will have a long life. When one sees public library shelves lined with one dreary pro-UFO book after another, it is tempting to hope that this might finally be the last flying saucer book for which money will ever be spent. I have done my part by ordering several copies of *Watch the Skies!* for local libraries. After finishing this book, you may want to do the same.

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A Classic Work on the Nature of Death

Dying to Live. By Susan Blackmore. Prometheus Books, Buffalo, N.Y., 1993. 291 pp. Hardcover, $23.95.

ROBERT A. BAKER

Susan Blackmore is a psychologist and scientist whose contributions to our knowledge of human behavior and the cause of skepticism are of stellar magnitude. After *Dying to Live* she will also be recognized as a philosopher of considerable talent. Her aim in this book is no less than to tackle the nature of human death.

After pointing out that Darwin's theory of natural selection and evolution is "the simplest and most beautiful in all of science" (p. xi) and one that provides the key to understanding ourselves, she notes in support, "You need a system for reproducing things that is not exact

copying—it produces variation. And you need an environment in which there is not room for all the things that are made. Obviously, some things survive and some do not. And the ones that survive pass on copies more similar to themselves than to the dead ones. That's all. Out of that simple principle comes the whole of evolutionary theory and our understanding of our own origins."

Blackmore notes that the problem with evolution is, and always has been, that it leaves little room either for a grand purpose to life or for an individual soul. Our natural environment molds the progress of evolution and it, in turn, is part of that evolutionary process. In fact, the entire planet can be seen as an interdependent living system, as has been proposed in the Gaia hypothesis. We are, she tells us, merely tiny parts of that living, evolving whole. Moreover, "as parts of the whole, we are indispensable; as individuals, each of us is eminently dispensable" (p. xii).

Whether we like it or not, there is no future heaven toward which evolution is progressing, nor is there any ultimate cosmic purpose to the universe we inhabit. The dirty trick, Blackmore tells us, is that our minds have evolved to crave purposefulness, and we also cling to the belief in a self because this belief helps to keep alive the body and perpetuate the genes.

Evolution, in other words, makes it very hard for us to accept not only the idea of evolution but also our own "individual pointlessness" (p. xii). It is hardly surprising therefore that there are still powerful lobbies here in the United States for the teaching of creationist biology in the schools. The sad message of evolutionary biology is a fact that few human beings are prepared to face. The idea that a God created us all for a special purpose is

certainly a lot more palatable than the idea that we managed to get here through the whims of chance and cosmic necessity—as it is put by Jacques Monod.

Blackmore emphasizes the fact that people will fight and die for the ideas they like best, but death is definitely an idea that they do not like. On the other hand, the "self" is an idea that they do like, and the idea of an everlasting eternal self is an idea they like even better. Science began tackling the nature of human origins more than 130 years ago, and Blackmore says that it is now time that it tackle the nature of human death. For the past 20 years there has been great progress in the study of what have come to be known as "near-death experiences" (NDEs) and what happens to us physiologically and psychologically when we begin to die. Blackmore's review of the psychology, biology, and neurology of the dying brain and its illusions and delusions is simply summarized without the usual medical or mystical mumbo-jumbo. Her book should be widely read.

Blackmore's coverage of the issues surrounding death and dying is thor-

ough and comprehensive as well as highly critical of other attempts to account for the subjective phenomena in earlier religious, philosophical, and pseudoscientific terms. She is at her most brilliant when she takes on the particular subjective phenomena reported by those who have undergone an NDE and those who support a religious, mystical, or otherworldly interpretation, for example, Raymond Moody, Melvin Morse, Jeffrey Iverson, and Kenneth Ring.

Blackmore neatly demolishes Ring's psychological and "holographic theory" in her chapter "Realer Than Real." Ring, in *The Omega Project* (1992), assumes that consciousness is a "field effect, an all-pervading element in the universe, perhaps associated with space-time in ways not currently apparent to us. . . ." In other words, an "alternative reality" accounts for the experience being "realer than real." Ring assumes consciousness can function in this other reality without the brain. This, according to Blackmore, is nonsense. Does this hypothesis account for other NDE features? No. Does it have to invent a new world, ad hoc? Yes. Does this hypothesis make any testable predictions? No.

Blackmore responds clearly and effectively: (1) the *consistency* argument, i.e., the joy and peace, the tunnel, the light and the noises are consistent because of the natural way the cells are laid out in the visual system; the OBE is consistent because it is the brain's way of dealing with the body image and its image of reality; peace and the life review is consistent because of the release of endorphins or natural opiates that cause random activation and seizures in the temporal lobe and limbic system where memories are organized. The same effect leads to the time breakdown, dissolution of self, and the consequent mystical experiences and their after-effects. No afterlife hypothesis is necessary; the dying-brain hypothesis is better.

As for (2) the *reality* argument, i.e., the NDE's feel so "real" that they, therefore, *must be* real. No. In the brain's normal process of model building some models seem very, very real and some do not. There is no one, no person, self, or ego, to travel out of the body, nor is there any next world to go to! Concerning (3) the *paranormal* argument, i.e., that the experience cannot be explained by science and, since science can't solve it, this proves it is real: Hardly, Blackmore says. Psychology, physics, and biology say otherwise. The dying-brain hypothesis accounts for the experiences of familiarity, insight, déjà vu, and the psychic aspects.

To fully appreciate Blackmore's philosophical stance and her psychology we need to look at what modern cognitive psychology tells us. Human decisions are the consequences of lots and lots of parallel intellectual processes coming together to produce a willful action, a word, or a remembered event. The brain is a very complex system doing lots of things in parallel and making lots of decisions at once. There is no one *person or self* in there doing it all. Neither is there an "I" separate from this system to make a decision. This "I" is a delusion. The brain creates a vast set of mental models about reality, and the "I" is one of those mental models. Our brains build us. My brain builds "me" and your brain builds "you." My consciousness and your consciousness and my awareness and your awareness are products of the way this brain system builds its model of reality.

During its normal day-by-day operations the brain builds many models of possible as well as impossible things, but only what we take

to be the world "out there," Blackmore explains, seems real. The brain's major problem is to decide which of the things it has to confront are real and which are imaginary. This is not always an easy task, and mistakes are often made. It not only has to model an external world with a "self" in it, but it also has to try out possible actions in the imagination, manipulate ideas in dreams and fantasies, separate the real from the imaginary, and predict its future actions and those of others as well. To succeed, it must have a very clear idea of which of the models are the "experimental ones" and which represent the "real world."

Isn't the brain smart enough to know which came in from the world outside and which were created out of memory and imagination? Not really. From the outset, the processing of information from the eyes and ears gets mixed up with information from memory. When the mental memory models or the imagination's models are compared with the visual input, the brain is not certain that just because it came from the eyes it must be real. It has to check up on the model to see what it does next. If it changes from moment to moment, then it must be imaginary. In Blackmore's words, "Our reality at any time is the brain's collection of stable mental models built largely out of present sensory input and memory, integrated to form a model of the self in the world." Moreover, all of our beliefs are merely mental models.

It is difficult for many people to grasp the idea that hallucinatory experiences are very, very like reality. So like it in fact that we cannot tell the difference. These false perceptions are much more common than most people realize, and they lead us very easily into false beliefs, or delusions. The psychological process of remembering and imagining is the same, identical.

Blackmore makes all of this crystal clear by bringing us back to the marvelous but fallible human brain. Wonderful though the brain may be, it is far from perfect. What reports of satanic ritual abuse, alien abductions, out-of-body experiences (OBEs), false memories, NDEs, and hypnopompic and hypnagogic hallucinations have in common is a deluded brain.

As John Lilly (1978) noted years ago, just a small dose of the anesthetic ketamine can also bring on the typical NDE experience. On the Oprah Winfrey show of January 3, 1994, devoted to NDEs, a female former drug addict who had overdosed underwent a typical sleep paralysis with hypnagogic and hypnopompic hallucinations in which she was subjectively paralyzed with heavy suffocating pressure on her chest and was surrounded by satanic demons. This she interpreted as an NDE visit to hell. During this show Oprah introduced a group of women who reported NDEs during childbirth. The human brain, it seems, whenever it is subjected to unusual mental or physical stresses and strains, responds appropriately and typically, that is, neurochemically, with hallucinatory defensive reactions, i.e., misperceptions. These we color with our religious beliefs, our folklore, and our hopes and fears. This is the source of all those guardian angels we create to protect our threatened egos and fend off terror.

Like the Buddhists, Blackmore believes that all we are is "a collection of mental models," and that all we can ever experience *are* our mental models. In her words, "This idea can be just too horrible to accept and we will go to enormous lengths to invent something more substantial to hang on to." When she talked with the ex-psychologist Richard Alpert (Baba Ram Dass) about this human problem

of having to live with these insights and difficulties, Blackmore reports, "He said simply, 'Aha, and you know it's much worse even than that.' Oddly enough this was the most comforting thing he could have said."

Blackmore has given us a skeptical classic on the order of Lawrence Kusche's *Bermuda Triangle Mystery—Solved*, Joe Nickell's *Inquest on the Shroud of Turin*, James Randi's *The Faith-Healers*, and other illuminating and enlightening breakthroughs for the collective cause of science, reason, and sanity. If you admire the wisdom, insights, and compassion of classical Buddhism, you will be delighted with Blackmore's *Dying to Live*.

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Is Bigfoot an Endangered Species?

Big Footprints: A Scientific Inquiry into the Reality of Sasquatch. By Grover S. Krantz. Johnson Books, Boulder, Colo., 1992. 300 pp. Paper, $14.95.

ROBERT BOSTON

About 20 years ago, the mysterious creature known as Bigfoot was all the rage among some American paranormalists. Sadly, today the creature suffers an almost criminal form of neglect in both paranormal and skeptical circles, relegated to being the largely forgotten stepsister of more contemporary phenomena like lightbulb-headed extraterrestrials fond of kidnapping, angry poltergeists who torment teenagers, and ancient warriors from Atlantis who speak through unemployed actresses.

Perhaps someday soon someone will find some use for Bigfoot, but for now eyewitness reports of the hairy hominid have been reduced to a trickle. Despite this decline in interest among paranormalists generally, however, the beast remains a subject of intense speculation by a small group of hardcore "true believers."

Most anthropologists flatly reject the notion that an unknown primate of Bigfoot's size could live undetected in North America. One anthropologist who does not is Grover S. Krantz of Washington State University. Krantz remained hot on Bigfoot's furry trail long after everyone else lost interest. His recently published book, *Big Footprints: A Scientific Inquiry into the Reality of Sasquatch*, is an attempt to do the impossible: prove the animal's existence without a corpse or live specimen. Not surprisingly, Krantz fails outright.

The cover blurb for *Big Footprints* reads, "A great deal of nonsense has been written about the mysterious Sasquatch, or Bigfoot, allegedly sighted over much of North America but primarily in the Pacific Northwest. This exciting book by a distinguished physical anthropologist cuts through the mists of hysteria and superstition to the hard facts of physical traces and primate behavior and comes to the

surprising conclusion that the animal almost certainly exists."

Well, not exactly. Far from being a truly scientific study of Bigfoot, *Big Footprints* is merely the latest addition to a great heap of nonsense.

Krantz's book shares certain parallels with a textbook on creation science. To those who don't know better, it *looks* like real science. After all, it's loaded with complex-looking drawings and photographs and has three appendices and a bibliography. But unfortunately for Krantz, fancy drawings and scholarly sounding afterthoughts do not science make.

Krantz begins his book with a reasonable observation. He concedes that the burden of proof rests with those who believe in Bigfoot—Krantz prefers to use the term "Sasquatch"—and says the scientific community has no obligation to accept the creature's existence without a body, live or dead.

Unfortunately, after that brief bout with lucidity it's all downhill. Despite the disclaimer, Krantz wastes no time in beginning his assault on the "Scientific Establishment" (a term he always capitalizes) for refusing to look at his plaster casts of footprints and home movies of furry objects running through the woods.

Logic soon fails Krantz entirely. The first section of the book deals with Sasquatch footprints, which Krantz says have been found all over the Pacific Northwest. He says he knows a fellow Sasquatch enthusiast who has a thousand footprints on file. Krantz then postulates there are probably a hundred footprint reports in other investigators' files for each one his friend has collected. Krantz says one should multiply that number (100,000) by 10 to cover all the tracks that Bigfoot hunters see but don't report. Furthermore, *that* number (1 million) must be multiplied by 100 to account for all the tracks left in places inaccessible to humans (but not Sasquatches). The result? 100 million tracks that skeptics must account for. Krantz then asserts that the tracks must be real because it would take an army of fakers working full time to create 100 million false footprints!

This is rubbish, and Krantz should be embarrassed for suggesting it. Skeptics are *not* responsible for explaining away millions of hypothetical tracks that no one has ever reported. They must deal only with the thousand or so offered as "evidence." The skeptics' job becomes a lot easier, as Krantz himself acknowledges, when the known hoaxes are omitted.

Elsewhere Krantz shows an inclination toward duplicity. A good example is the story behind a 1970 Bigfoot track that Krantz says convinced him that the creature is real. A series of tracks, he reports, was left by a "crippled" Sasquatch near Bossburg, Washington. The tracks supposedly showed a seriously deformed giant foot in such detail that Krantz believes they could not have been faked.

Krantz was led to the "crippled" tracks by a Bigfoot enthusiast named Ivan Marx. What Krantz doesn't tell his readers is that Marx has a history of fabricating Bigfoot evidence. On two occasions Marx attempted to pass off phony Bigfoot films. Both were obvious fakes. (One allegedly depicted the "crippled" Sasquatch.) In one instance Marx was observed purchasing a fur coat just days before his film appeared. Krantz must know that Marx is not a reliable source, since Krantz's bibliography includes a book by Bigfoot-hunter René Dahinden that exposes Marx. Yet Krantz relies on Marx to provide convincing "proof" of Bigfoot's existence.

Krantz also shows an unfortunate tendency toward gullibility. For

instance, he speaks favorably of the "Jacko incident" from nineteenth-century British Columbia, whereby a "baby" Sasquatch was allegedly captured by locals in a small town. Krantz mentions in passing that the incident might be a hoax. He is apparently not aware that fellow Bigfoot researchers proved *15 years ago* that "Jacko" was a newspaper hoax.

Like every good paranormal crank, Krantz refuses to confront the aspects of the mystery that conflict with his pet ideas. He confines his discussion to the Pacific Northwest, touching only briefly on Sasquatch appearances elsewhere. Yet Bigfoot has been reported in every state except Hawaii and Rhode Island and has been spotted in semi-urban areas that simply do not have sufficient forest cover capable of harboring such an animal. (In 1976, for example, a cab driver said he spotted one rummaging through some trash cans behind a shopping mall in suburban Baltimore!) Krantz gives great credibility to eyewitness reports from sparsely populated regions of the Pacific Northwest—where Bigfoot could at least theoretically live and hide. He touches only briefly on reports of sightings from suburbs and less forested states.

And, for all his talk of footprint dermal ridges and arches, Krantz steers clear of footprint evidence that clouds the issue. Krantz contends he has proved the creature's existence by studying an abundance of five-toed tracks that are so detailed and are found in such inconvenient places that they cannot be fakes. He mentions in passing that clear four-toed tracks have also been found, but he never reports that numerous three-toed and even two-toed tracks have also been photographed and cast in plaster following alleged Bigfoot sightings. If Krantz's five-toed tracks are good evidence, then why aren't the others? Perhaps because Krantz knows that the idea of a primate with less than five toes is absurd. Five-toed tracks fit his paradigm; the other tracks do not, so out they go.

Likewise, Krantz simply glosses over the numerous eyewitness sightings on record that suggest that Bigfoot is something other than a flesh-and-blood animal, since that's his belief. He acknowledges that there is a "lunatic fringe" to Bigfoot, but doesn't tell the reader that these types of stories account for an uncomfortably large number of sightings. In fact, over the years, reports have been logged of Bigfoots stepping out of or into UFOs. There have been reports of transparent Bigfoots, Bigfoots that wore ragged trousers, Bigfoots that tried to communicate through crude hand signals, even Bigfoots who scrawled cryptic messages in the ground. Krantz is undoubtedly embarrassed by these stories, so he simply discounts them all.

Lastly, there are some sections of the book that are simply bizarre. For instance, Krantz asserts that Northwest logging companies might be paying people to spread wild tales about Bigfoot to discredit the movement. Their motivation? If Sasquatches are found, they will surely be declared endangered, and logging will be restricted. The "helicopter incident" is also disturbing. Krantz is obsessed with the idea of using a low-flying helicopter to search for Bigfoot, figuring he can probably find a dead body if he just looks around enough. But there is one drawback: helicopters are expensive. Krantz tells how he sought to get around the problem by purchasing a "do-it-yourself" helicopter kit for $2,200. Not surprisingly, he has never been able to get the contraption off the ground. Observes Krantz soberly: "I suspect its design was faulty."

Reports of Bigfoot and other monsters often spread from town to town in rural areas and occur in short-lived waves. The spread of such legends and the oral tradition behind them would make an interesting subject of study for social scientists and folklorists. Krantz is clearly not up to this task. He offers instead a bitter book full of useless speculations about how Bigfoot reproduces and what it eats, augmented by page after page of excruciating detail about how all of those footprints could not possibly have been faked.

In short, *Big Footprints* is a disappointment. Worse, it's a bore. Readers looking for something entertaining to read about Bigfoot should scour used-book stores for the lurid paperbacks produced during the "golden age" of the Sasquatch—the 1970s. Especially recommended is *Creatures of the Outer Edge* by Jerome Clark and Loren Coleman. Clark and Coleman are every bit as gullible as Krantz, but at least they know how to spin a monster yarn so that the reader gets an occasional chill.

Robert Boston is a writer/editor who lives in Silver Spring, Maryland.

See also Michael Dennett's investigative article "Bigfoot Evidence: Are These Tracks Real?" in this issue—EDITOR

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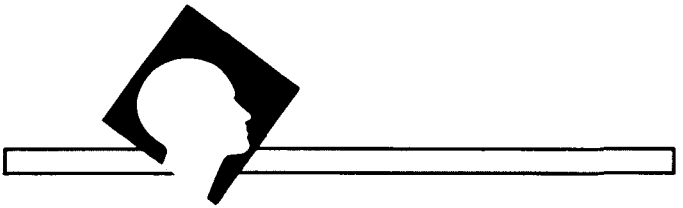


Kooks: A Guide to the Outer Limits of Human Belief. Donna Kossy. Feral House, P.O. Box 3466, Portland, OR 97208, 1994. 253 pp. $16.95, paper. Donna Kossy has a fascination with kooks of all varieties. Here she has organized, collected, and commented upon the kinds of tracts one gets handed on the streets of major cities or receives in the mail, "desperate pleas from victims of mind control," people with "a theory that will solve all the world's problems," and so on. She has affection for her subject, and she distinguishes kooks from "quacks, frauds, and hoaxers" in that "kooks are invariably sincere." This intriguing oversized and illustrated work is organized by broad subjects that attract kooks: religion, science (antigravity, hollow earth, third eye, etc.), metaphysics, politics, conspiracy, and enigmas.

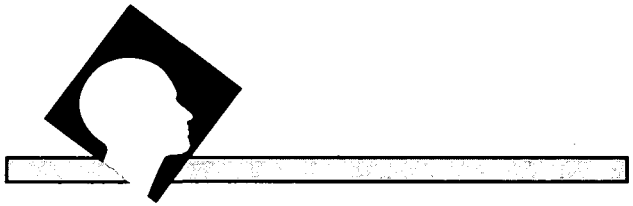
Universe Down to Earth, Neil de Grasse Tyson. Columbia University Press, New York, 1994. 275 pp. $29.95, hardcover. Written for the nonscientist by a Princeton astrophysicist, this is a delightful, witty, informal, and wise guide to a sampling of essential principles, processes, and concepts of science. "The book's objective," the author writes, "is to convey ideas that etch deeply enough on the mind so that the concepts are not just remembered—they are absorbed into one's intuition." In addition, the author's brief chapter "Horrorscope" presents "an astronomer's rebuttal" to astrology.

Watch the Skies! A Chronicle of the Flying Saucer Myth. Curtis Peebles. Smithsonian Institution Press, Washington, D.C., 1994. 342 pp. $24.95, hardcover. A major and very welcome historical examination of the UFO phenomenon by an objective, scholarly researcher. Peebles places UFO beliefs into the context of modern myth-making. Readable and well organized, it should be of lasting value. See review, this issue.

Whispers: The Voices of Paranoia. Ronald K. Siegel. Crown Publishers, New York, 1994. 336 pp. $23, hardcover. The noted UCLA psychiatric researcher and author of *Fire in the Brain* here provides an informative and sometimes frightening investigation into paranoia—what it's like to experience the suspicion, terror, and rage that possess the mind of the paranoid. Here delusions and hallucinations feed on each other. Paranoia is often considered a distraction caused by "false beliefs" of persecution; but, as Siegel says, if you are afflicted by paranoia, you *know* that these are not delusions—people *are* harassing and persecuting you. You just have to find out who they are and why they're doing it. This is said to be the first book to investigate the actual experience of paranoia and to demonstrate that under the right conditions—drugs or deprivation, for example—anyone can be driven to that state.

—*Kendrick Frazier*

Articles of Note



"Alternative Medicine: The Facts." *Consumer Reports,* January 1994, pp. 51-53. Introduction to major three-part series attempting a careful and balanced appraisal of alternative medicine. "It's a field whose practitioners range from sober academic physicians to entrepreneurial faith healers. And it's a field where there are still few careful scientific studies, and where investigators haven't even agreed on what rules of evidence should apply." Part 1, "Acupuncture," January 1994, pp. 54-59. Part 2, "Homeopathy: Much Ado About Nothing?" March 1994, pp. 201-208. Part 3, "Chiropractors," June 1994, pp. 383-390. A serious and accessible evaluative effort.

Crewdson, John. " 'Perky Cheerleaders.' " *Nieman Reports,* 47 (4): 11-16, Winter 1993. A lengthy critique of news reports on science. Not only do journalists have trouble getting the facts right, but by reducing all scientific arguments to a debate between two equal parties they mislead their readers.

Emery, C. Eugene, Jr. "Helping Hand or Surrogate Mind?" *Providence Sunday Journal.* May 8, 1994, pp. A1, A16-17. Excellent, comprehensive (nearly two full newspaper pages in length) investigative report into Facilitated Communication (FC). Emery provides national perspective, summarizing previous studies proving that it's the facilitator doing the communicating, not the autistic patient. He also carries out similar investigations of his own at the Groden Center, Providence, Rhode Island, which trained its entire staff in FC. When he shows a card with a drawing on it to both a 16-year-old patient and his facilitator, the patient correctly identifies the object shown; when he holds the card at an angle so the facilitator can't see it, the patient can't identify it.

Feder, Kenneth L. "The Spanish Entrada: A Model for Assessing Claims of Pre-Columbian Contact Between the Old and New Worlds." *North American Archaeologist,* 15(2): 147-166, 1994. Article uses the historically documented, early sixteenth-century Spanish exploration of the American Southwest as a model for the kind of archaeological evidence to be expected if scenarios of pre-Columbus, pre-Viking discovery, exploration, and settlement of the New World were to be credible. The evidence for these claims is epigraphic, however, not archaeological. Feder suggests that unless and until archaeological evidence is forthcoming, an earlier presence of Celts, Libyans, Chinese, or other visitors to the New World will remain unproved.

Goleman, Daniel. "Miscoding Seen as Root of False Memories." *New York Times,* May 31, 1994, pp. B5, B8. Excellent report on new scientific agreement on the most likely neurological and cognitive bases of false memory. The mental mechanism at the root appears to be source amnesia, the inability to recall the origin of the memory of a given event. Once the source of a memory is forgotten, scientists reported at a conference on

the issue at Harvard Medical School, people can confuse an event that was only imagined or suggested with a true one. The resulting memory, though false, carries the feeling of authenticity.

Johnston, Paul Dennithorne. "How to Think Superstitiously." *Etc: A Review of General Semantics*, 51 (1): 36-41, Spring 1994. A wry look at superstitious thought, particularly how it is encouraged by the use of the verb "to be."

Joynson, Robert B. "Fallible Judgments." *Society*, 31 (3): 45-52, March/April 1994. After his death the British psychologist Cyril Burt was accused of committing fraud in IQ studies. This special issue of *Society* has ten articles on fraud in social science; two of them report on evidence that Burt was not guilty.

Lepper, Bradley T. "Just How Holy Are the Newark 'Holy Stones'?" In *Vanishing Heritage*. Licking County Archaeology and Landmarks Society, Licking County, Ohio, pp. 58-64. Several persons with no formal training in archaeology have recently resurrected the controversy about the Newark "Holy Stones," long dismissed as frauds by archaeologists. Lepper show why they cannot reasonably be accepted as credible evidence for a pre-Columbian Hebrew presence.

Maddox, John. "Defending Science Against Anti-science." *Nature*, 368:185, March 17, 1994. Passionate commentary by the editor of *Nature* calling for concerted action by scientists against the forces of antiscience. "Is it not disgraceful that there should be such general and benign tolerance of astrology (and other mumbo-jumbo, such as faith healing, water divining, and spiritualism), apparently on the grounds that they are the harmless pursuits of people who are not scientists?" Maddox includes in his litany of culprits pressure groups (which include many scientists) "exploiting the willingness of the general public to be frightened by issues they do not understand," such as nuclear power and genetics. Letters responding to this commentary are in *Nature*, 368:682, April 21, 1994.

Newport, Frank. "Half of Americans Believe in Creationist Origin of Man." *Gallup Poll Monthly*, No. 336: 24-28, September 1993. National polls taken in 1992 found little change in religious beliefs over a ten-year period. Forty-seven percent of those polled believed in special creation; an additional 35 percent believed in God-guided evolution.

O'Neill, Molly. "As Life Gets More Complex, Magic Casts a Wider Spell." *New York Times*, June 13, 1994, pp. 1, B5. Front-page article on the increasing enchantment of Americans "with products and notions that promise a simple route to transformation, salvation, or cure. More and more marketers are imbuing foods and forms of exercise, cosmetics and folk cures with magical powers to fight aging and disease. And magical themes abound in plays, movies, books, and music." James Randi is quoted (and pictured on the front page), as are other observers and commentators on the trend toward magical thinking among consumers.

Pfluger, Carl. "God vs. the Flying Saucers." *Southwest Review*, 78 (4): 555-571, Autumn 1993. A long, philosophic essay on the tendency of Erich von Däniken and others to see civilization as something brought to Earth by aliens. Pfluger sees the pur-

suit of artificial intelligence as an outgrowth of this.

Raichle, Marcus E. "Visualizing the Mind." *Scientific American*, April 1994, pp. 58-64. Article on how new brain imaging technology and strategies of cognitive science have opened a window to the neural systems responsible for thought.

Silberfeld, Michael, et al. "Assessment of Financial Competence in an Adult with Autism." *Canada's Mental Health*, 41 (3): 1-6, Fall 1993. Clinicians evaluated an autistic man to see if he was competent to handle an inheritance. One tool used was Facilitated Communication. The authors discuss the controversy surrounding this method and how it worked and didn't work for them.

Smyth, Jeff. "Promo Starring Psychic Adds Up for Arizona Hotel." *Advertising Age*, 64 (18): 16, April 26, 1993. The Crescent Hotel has attracted the attention of—and business from—travel agents, by offering them the services of numerologist Sandra Cousins.

Winship, Michael P. "Prodigies, Puritanism, and the Perils of Natural Philosophy: The Example of Cotton Mather." *William and Mary Quarterly*, 51 (1): 92-105, January 1994. At the end of the seventeenth century, scientists were beginning to reject prodigies (the interpretation of such phenomena as comets and monstrous births as supernatural omens). Puritan minister Cotton Mather reluctantly changed his beliefs to fit the fashion.

Zingarelli, Mark. "God's Country." *Mother Jones*, March/April 1994. pp. 50-57. Zingarelli reports, in comic book form, on his battles with the school board of Stanwood, Washington, over creationist teachings in the schools.

—Kendrick Frazier and Robert Lopresti

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FALL 1993 (vol. 18, no. 1): 'Perspectives on education in America': Sandia study challenges misconceptions, *Frazier.* Do 'honesty' tests really measure honesty? *Lilienfeld.* Astrology strikes back—but to what effect? *Dean.* Diagnoses of alien kidnappings that result from conjunction effects in memory, *Dawes and Mulford.* Mathematical magic for skeptics, *Benjamin and Shermer.* The blind girl who saw the flash of the first nuclear weapon test, *Sinclair.* Science: The feminists' scapegoat? *Walker.*

SUMMER 1993 (vol. 17, no. 4): The right hemisphere: An esoteric closet? *Saraví.* Improving science teaching: The textbook problem, *Padian.* The eyewitness: Imperfect interface between stimuli and story, *Reich.* Pathological science: An update, *Cromer.* Jack Horkheimer, "Star Hustler," *interview by Gabriel Seabrook.* The false memory syndrome, *Gardner.*

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FALL 1991 (vol. 16, no. 1): Near-death experiences, *Blackmore.* Multicultural pseudoscience: Spreading scientific illiteracy, Part 1, *de Montellano.* Science and commonsense skepticism, *Aach.* Spook Hill, *Wilder.* Lucian and Alexander, *Rowe.* 1991 CSICOP conference, *Shore* and *Frazier.*

SUMMER 1991 (vol. 15, no. 4): Lucid dreams, *Blackmore.* Nature faking in the humanities, *Gallo.* Carrying the war into the never-never land of psi: Part 2, *Gill.* Coincidences, *Paulos.* Locating invisible buildings, *Plummer.* True believers, *Bower.*

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WINTER 1991 (vol. 15, no. 2): Special report / Gallup poll: Belief in paranormal phenomena, *Gallup and Newport.* Science and self-government, *Piel.* West Bank collective hysteria episode, *Stewart.* Acceptance of personality test results, *Thiriart.* Belief in astrology: A test of the Barnum effect, *French, Fowler, McCarthy, and Peers.* A test of clairvoyance using signal-detection, *McKelvie and Gagné.* Intercessory prayer as medical treatment? *Wittmer and Zimmerman.*

FALL 1990 (vol. 15, no. 1): Neural Organization Technique: Treatment or torture, *Worrall.* The spooks of quantum mechanics, *Stenger.* Science and Sir William Crookes, *Hoffmaster.* The 'N' machine, *Cumming.* Biological cycles and rhythms vs. biorhythms, *Wheeler.* 1990 CSICOP Conference.

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SPRING 1990 (vol. 14, no. 3): Why we need to understand science, *Sagan.* The crisis in pre-college science and math education, *Seaborg.* Police pursuit of satanic crime, Part 1, *Hicks.* The spread of satanic-cult rumors, *Victor.* Lying about polygraph tests, *Shneour.* Worldwide disasters and moon phase, *Kelly, Saklofske, and Culver.*

WINTER 1990 (vol. 14, no. 2): The new catastrophism, *Morrison and Chapman.* A field guide to critical thinking, *Lett.* Cold fusion: A case history in 'wishful science'? *Rothman.* The airship hysteria of 1896-97,*Bartholomew.* Newspaper editors and the creation-evolution controversy, *Zimmerman.* Special report: New evidence of MJ-12 hoax, *Klass.*

FALL 1989 (vol. 14, no. 1): Myths about science, *Rothman.* The relativity of wrong, *Asimov.* Richard Feynman on fringe science. Luis Alvarez and the explorer's quest, *Muller.* The two cultures, *Jones.* The 'top-secret UFO papers' NSA *won't* release, *Klass.* The metaphysics of Murphy's Law, *Price.*

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SPRING 1989 (vol. 13, no. 3): High school biology teachers and pseudoscientific belief, *Eve and Dunn.* Evidence for Bigfoot? *Dennett.* Alleged pore structure in Sasquatch footprints, *Freeland and Rowe.* The lore of levitation, *Stein.* Levitation 'miracles' in India, *Premanand.* Science, pseudoscience, and the cloth of Turin, *Nickell.* Rather than just debunking, encourage people to think, *Seckel.* MJ-12 papers 'authenticated'? *Klass.* A patently false patent myth, *Sass.*

WINTER 1989 (vol. 13, no. 2): Special report: The 'remembering water' controversy, *Gardner and Randi;* Bibliographic guide to the 'dilution controversy.' Pathologies of science, precognition, and modern psychophysics, *Jensen.* A reaction-time test of ESP and precognition, *Hines and Dennison.* Chinese psychic's pill-bottle demonstration, *Wu Xiaoping.* The Kirlian technique, *Watkins and Bickel.* Certainty and proof in creationist thought, *Leferriére.*

FALL 1988 (vol. 13, no. 1): Special report: Astrology and the presidency, *Kurtz* and *Bob.* Improving Human Performance: What about parapsychology? *Frazier.* The China syndrome: Further reflections on the paranormal in China, *Kurtz.* Backward masking, *McIver.* The validity of graphological analysis, *Furnham.* The intellectual revolt against science, *Grove.*

SUMMER 1988 (vol. 12, no. 4): Testing psi claims in China, *Kurtz, Alcock, Frazier, Karr, Klass, and Randi.* The appeal of the occult: Some thoughts on history, religion, and science, *Stevens.* Hypnosis and reincarnation, *Venn.* Pitfalls of perception, *Wheeler.* Wegener and pseudoscience: Some misconceptions, *Edelman.* An investigation of psychic crime-busting, *Emery.* High-flying health quackery, *Hines.* The bar-code beast, *Keith.*

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WINTER 1987-88 (vol. 12, no. 2): The MJ-12 papers: Part I, *Philip J. Klass.* The aliens among us: Hypnotic regression revisited, *Baker.* The brain and consciousness: Implications for psi, *Beyerstein.* Past-life hypnotic regression, *Spanos.* Fantasizing under hypnosis, *Reveen.* The verdict on creationism, *Gould.*

FALL 1987 (vol. 12, no. 1): The burden of skepticism, *Sagan.* Is there intelligent life on Earth? *Kurtz.* Medical Controversies: Chiropractic, *Jarvis;* Homeopathy, *Barrett, M.D.;* Alternative therapies, *Jones;* Quackery, *Pepper.* Catching Geller in the act, *Emery.* Special Report: CSICOP's 1987 conference.

SUMMER 1987 (vol. 11, no. 4): Incredible cremations: Investigating combustion deaths, *Nickell and Fischer.* Subliminal deception, *Creed.* Past tongues remembered? *Thomason.* Is the universe improbable? *Shotwell.* Psychics, computers, and psychic computers, *Easton.* Pseudoscience and children's fantasies, *Evans.* Thoughts on science and superstrings, *Gardner.* Special Reports: JAL pilot's UFO report, *Klass;* Unmasking psychic Jason Michaels, *Busch.*

SPRING 1987 (vol. 11, no. 3): The elusive open mind: Ten years of negative research in parapsychology, *Blackmore.* Does astrology need to be true? Part 2: The answer is no, *Dean.* Magic, science, and metascience: Some notes on perception, *D. Sagan.* Velikovsky's interpretation of the evidence offered by China, *Lo.*

WINTER 1986-87 (vol. 11, no. 2): Case study of West Pittston 'haunted' house, *Kurtz.* Science, creationism and the Supreme Court, *Seckel,* with statements by *Ayala, Gould,* and *Gell-Mann.* The great East Coast UFO of August 1986, *Oberg.* Does astrology need to be true? Part 1, *Dean.* Homing abilities of bees, cats, and people, *Randi.*

FALL 1986 (vol. 11, no. 1): The path ahead: Opportunities, challenges, and an expanded view, *Frazier.* Exposing the faith-healers, *Steiner.* Was Antarctica mapped by the ancients? *Jolly.* Folk remedies and human belief-systems, *Reuter.* Dentistry and pseudoscience, *Dodes.* Atmospheric electricity, ions, and pseudoscience, *Dolezalek.* Noah's ark and ancient astronauts, *Harrold and Eve.* The Woodbridge UFO incident, *Ridpath.* How to bust a ghost, *Baker.*

SUMMER 1986 (vol. 10, no. 4): Occam's razor, *Shneour.* Clever Hans redivivus, *Sebeok.* Parapsychology miracles, and repeatability, *Flew.* The Condon UFO study, *Klass.* Four decades of fringe literature, *Dutch.* Some remote-viewing recollections, *Weinberg.*

SPRING 1986 (vol. 10, no. 3): The perennial fringe, *Asimov.* The uses of credulity, *de Camp.* Night walkers and mystery mongers, *Sagan.* CSICOP after ten years, *Kurtz.* Crash of the crashed-saucers claim, *Klass.* A study of the Kirlian effect, *Watkins and Bickel.* Ancient tales and space-age myths of creationist evangelism, *McIver.*

WINTER 1985-86 (vol. 10, no. 2): The moon was full and nothing happened, *Kelly, Rotton, and Culver.* Psychic studies: The Soviet dilemma, *Ebon.* The psychopathology of fringe medicine, *Sabbagh.* Computers and rational thought, *Spangenburg and Moser.*

FALL 1985 (vol. 10, no. 1): Investigations of firewalking, *Leikind and McCarthy.* Firewalking: reality or illusion, *Dennett.* Myth of alpha consciousness, *Beyerstein.* Spirit-rapping unmasked, *V. Bullough.* The Saguaro incident, *Taylor and Dennett.*

SUMMER 1985 (vol. 9, no. 4): Guardian astrology study, *Dean, Kelly, Rotton, and Saklofske.* Astrology and the commodity market, *Rotton.* The hundredth monkey phenomenon, *Amundson.* Responsibilities of the media, *Kurtz.* 'Lucy' out of context, *Albert.*

(continued on next page)

SPRING 1985 (vol. 9, no. 3): Columbus poltergeist: I, *Randi.* Moon and murder in Cleveland, *Sanduleak.* Image of Guadalupe, *Nickell and Fischer.* Radar UFOs, *Klass.* Phrenology, *McCoy.* Deception by patients, *Pankratz.* Communication in nature, *Orstan.*

WINTER 1984-85 (vol. 9, no. 2): The muddled 'Mind Race,' *Hyman.* Searches for the Loch Ness monster, *Razdan and Kielar.* Final interview with Milbourne Christopher, *Dennett.* Retest of astrologer John McCall, *Ianna and Tolbert.*

FALL 1984 (vol. 9, no. 1): Quantum theory and the paranormal, *Shore.* What is pseudoscience? *Bunge.* The new philosophy of science and the 'paranormal,' *Toulmin.* An eye-opening double encounter, *Martin.* Similarities between identical twins and between unrelated people, *Wyatt et al.* Effectiveness of a reading program on paranormal belief, *Woods,* Pseudoscientific beliefs of 6th-graders, *A. S. and S. J. Adelman.*

SUMMER 1984 (vol. 8, no. 4): Parapsychology's past eight years, *Alcock.* The evidence for ESP, *C. E. M. Hansel.* $110,000 dowsing challenge, *Randi.* Sir Oliver Lodge and the spiritualists, *Hoffmaster.* Misperception, folk belief, and the occult, *Connor.* Psychology and UFOs, *Simón.*

SPRING 1984 (vol. 8, no. 3): Belief in the paranormal worldwide: Mexico, *Mendez-Acosta;* Netherlands, *Hoebens;* U.K., *Hutchinson;* Australia, *Smith;* Canada, *Gordon;* France, *Rouzé.* Debunking, neutrality, and skepticism in science, *Kurtz.* University course reduces paranormal belief, *Gray.* The Gribbin effect, *Roder.* Proving negatives, *Pasquarello.*

WINTER 1983-84 (vol. 8, no. 2): Sense and nonsense in parapsychology, *Hoebens.* Magicians, scientists, and psychics, *Ganoe and Kirwan.* New dowsing experiment, *Martin.* The effect of TM on weather, *Trumpy.* The haunting of the Ivan Vassilli, *Sheaffer.* Venus and Velikovsky, *Forrest.*

FALL 1983 (vol. 8, no. 1): Creationist pseudoscience, *Schadewald.* Project Alpha: Part 2, *Randi.* Forecasting radio quality by the planets, *Dean.* Reduction in paranormal belief in college course, *Tobacyk.* Humanistic astrology, *Kelly and Krutzen.*

SUMMER 1983 (vol. 7, no. 4): Project Alpha: Part 1, *Randi.* Goodman's 'American Genesis,' *Feder.* Battling on the airwaves, *Slavsky.* Rhode Island UFO film, *Emery.*

SPRING 1983 (vol. 7, no. 3): Iridology, *Worrall.* The Nazca drawings revisited, *Nickell. People's Almanac* predictions, *Donnelly.* Test of numerology, *Dlhopolsky.* Pseudoscience in the name of the university, *Lederer and Singer.*

WINTER 1982-83 (vol. 7, no. 2): Palmistry, *Park.* The great SRI die mystery, *Gardner.* The 'monster' tree-trunk of Loch Ness, *Campbell.* UFOs and the not-so-friendly skies, *Klass.* In defense of skepticism, *Reber.*

FALL 1982 (vol. 7, no. 1): The prophecies of Nostradamus, *Cazeau.* Prophet of all seasons, *James Randi.* Revival of Nostradamitis, *Hoebens.* Unsolved mysteries and extraordinary phenomena, *Gill.* Clearing the air about psi, *Randi.* A skotography scam, *Randi.*

SUMMER 1982 (vol. 6, no. 4): Remote-viewing, *Marks.* Radio disturbances and planetary positions, *Meeus.* Divining in Australia, *Smith.* "Great Lakes Triangle," *Cena.* Skepticism, closed-mindedness, and science fiction, *Beyerstein.* Followup on ESP logic, *Hardin and Morris* and *Gendin.*

SPRING 1982 (vol. 6, no. 3): The Shroud of Turin, *Mueller.* Shroud image, *McCrone.* Science, the public, and the Shroud, *Schafersman.* Zodiac and personality, *Gauquelin.* Followup on quantum PK, *Hansel.*

WINTER 1981-82 (vol. 6, no. 2): On coincidences, *Ruma Falk.* Croiset: Part 2, *Hoebens.* Scientific creationism, *Schadewald.* Follow-up on 'Mars effect,' *Rawlins,* responses by *CSICOP Council* and *Abell and Kurtz.*

FALL 1981 (vol. 6, no. 1): Gerard Croiset: Part 1, *Hoebens.* Test of perceived horoscope accuracy, *Lackey.* Planetary positions and radio propagation, *Ianna and Margolin.* Bermuda Triangle, 1981, *Dennett.* Observation of a psychic, *McIntyre.*

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Forum

Deep Ecology or Deep Sanity?

RALPH ESTLING

A review of *The Biophilia Hypothesis* published in *New Scientist* got me thinking. The reviewer, a Ph.D. seeker in ecopsychology, liked the book tolerably well but bemoaned the fact that its editors, Stephen Kellert and E. O. Wilson, seemed to have nothing to say about Deep Ecology, ecofeminism, New Age schools of thought, or the revival of paganism.

Stuck out here in darkest Britain I had never heard of Deep Ecology even though, according to the reviewer, it's "an increasingly popular philosophy and world-view that proclaims its grounding not in logic but intuition." I'm grateful for the information, as I've always harbored an abiding interest in increasingly popular philosophies and in worldviews grounded in intuition. I wouldn't want to go on record as being all that sure what ecofeminism is, but I imagine it's got something to do with the intuitive

worldview that states that women go easier on the environment than men, having a deeper psycho-physical harmonic convergence with trees and lakes and things because, as we all intuitively know, women are spiritually more akin to Nature, emotionally more attuned to the dangers of chlorofluorocarbon emissions into the atmosphere, and the destruction of the rainforests.

New Agers I've heard of. We have some here in the West Country. On the vernal equinox or summer solstice or something they congregate in their trailers around Stonehenge, which is an hour's drive from my place, down the A303. The New Agers used to be interested in crop circles—there were a lot of crop circles round these parts a couple years back—but I think they've gone off them now. There have been a lot fewer crop circles lately, and so a lot fewer New Agers have driven up to dance in them and feel the vibrations and all that. In the summer they meet up on Glastonbury Tor, about 30 miles from here, for the Harmonic Convergence, and swap stories about UFO sightings in Wiltshire, astral planes, and other stuff. We have a few pagans in these parts, but their numbers don't appear to be increasing. Most of them worship the Life Force you find in Ley lines and Gaia, grow organic string beans, and are afraid of having their brains go all spongy from catching mad cow disease from eating pork sausage. They're worried about the tap water, too, and what it's doing to the sperm count over here. On the whole they're rather quiet. I find pagans ecologically sound. I have time for pagans.

I'm sorry, I seem to have wandered off the subject.

The reviewer of *The Biophilia Hypothesis* says that the planet is to be redeemed by Deep Ecology, ecofeminism, New Age schools of thought, and the revival of paganism. Frankly, I have my doubts.

I can't help thinking that it's possible to love nature and be worried about what's being done to it and still not be a kook, phony, or charlatan. It is possible to rescue the environment while not dancing naked in Big Sur. It's even possible to behave rationally and *still* save our world. In fact, I'm inclined to think that behaving rationally might actually help, and so we ought to try it. I don't suppose folks who are into Deep Ecology, ecofeminism, the New Age, and paganism would agree.

To them my notions must seem way out, radical, strange, even frightening; they may not be spiritually attuned or psycho-physically prepared, but I still feel, intuitively, that Deep Sanity might be worth trying, if only as a last resort. Striving to attain a measure of rationality will not be easy. Using our brains to solve our problems is never easy—thinking causes sweat and is often painful and disturbing. Yet we have this wonderful goal before us. Dare I say it? It is known as: Growing Up.

When our self-proclaiming Life Lovers and Gaia Worshippers have achieved this feat, their apotheosis may not save the world. But it will come as a great, great relief to the rest of us.

As for saving the world, I'm very much in favor of it. I'd be sorry to see it go just like that. Mind you, it never did strike me as the best of all *possible* worlds, but it's the best we have. And when all's said and done, the world's a nice place to visit. Of course, I wouldn't want to live there.

I'll leave it to our Ph.D.s in ecopsychology to figure that one out.

Ralph Estling writes from Ilminster, Somerset, England. See page 556 of Letters to the Editor for more about him.

Did Fiction Give Birth to Bigfoot?

HUGH H. TROTTI

Despite many claimed sightings and various forms of evidence, it seems there is a possibility that Bigfoot originally appeared out of a book and that the legend is founded in the works of Jonathan Swift, the English satirist. This surprising possibility springs from the fact that *Gulliver's Travels* was said to be the favorite book of no less a character than Daniel Boone. The significance of that will soon become apparent.

Swift's book has at least three mentions in the recent biography of Boone by John Mack Faragher: *Daniel Boone: The Life and Legend of an American Pioneer* (New York: Henry Holt, 1992). These references are not all listed in the book's index, but occur where cited in this article. On annual hunts, Boone "frequently carried along a copy of the Bible, or a book of history, which he loved, or *Gulliver's Travels*, his favorite book, to read by the light of the campfire" (pp. 55-56).

It seems that Boone would read to his hunting companions from Swift's book, and that at least one place name in Kentucky is inspired by the book instead of being an Indian name: "Lulbegrud Creek," said to be a distorted form of the fictional capital of Swift's Brobdingnag characters named "Lorbrulgrud" (p. 83). In the biography Boone tells what the author calls a "tall tale" of "killing a ten-foot, hairy giant he called a 'Yahoo.' The Yahoos were giant beasts in human shape from Boone's favorite book, *Gulliver's Travels*. It was a tall tale that Boone repeated to a number of people during his last year, one such as he would (pp. 308-309).

A good place to check the source is Jonathan Swift's *Gulliver's Travels: An Authoritative Text; The Correspondence of Swift, Pope's Verses on Gulliver's Travels, Critical Essays*, 2nd ed., edited by Robert A. Greenberg (New York:

W. W. Norton, 1970). It is based on a 1735 Dublin edition with Swift's revisions of earlier publications, but without an index. The place to look for the "Yahoo" is Part 4, pages 191-260, entitled "A Voyage to the Country of the Houyhnhnms." Swift featured the Yahoos throughout this part of the book, which deals with those talking and highly philosophical horse-creatures with the unpronounceable name. Human beings (and Gulliver) seem to have been considered a sort of Yahoo also, perhaps a slightly more advanced type (see e.g., pp. 198, 202, 204, 220, 237, 248, 260).

"The hair of both Sexes was of several Colours, brown, red, black and yellow" (p. 193). Yahoos could sometimes be found in herds or groups. They were stronger and more agile than people (p. 222). Some were kept by the horse-creatures in stables or kennels as their servants (pp. 200, 202, 232). Yahoos climbed trees, were hairy, and had sharp hooked and pointed claws (p. 193). Yahoo females could be sexually aggressive (pp. 232-233) and had an offensive odor (p. 230); but Gulliver once captured a three-year-old male with a "smell very rank" (p. 232).

Yahoos don't seem to have been bigger or taller than people; if Boone said he'd killed one ten feet tall, the height might have come from him rather than Swift's book. How plausible is this origin for the more modern Bigfoot? While Daniel Boone (1734-1820) may have not had much formal schooling, he apparently had opportunities for being tutored (Faragher, pp. 16-17). Specimens of his writing survive. He could well have been able to read, and it is not surprising for him to have a copy of a well-known book of the period. The portrayal of the hairy "Yahoo" in *Gulliver's Travels* would also have been known by more people of the time than Daniel Boone. And Swift's attacks upon the vices of civilization may have appealed to woodsmen and others on the American frontier; while children might see Gulliver as a source of adventure, adults could read for amusement and disguised social criticism.

The "Mountain Men" of the far west, fur trappers of an era later than Boone's, were famous for tall tales. There is no real reason why Bigfoot cannot have come to life from the pages of Jonathan Swift's book and made the rounds of the camps of deer hunters and trappers of the frontier. The creature tales based on a literary Yahoo would have to last only a few decades to reach the western fur trappers. It's a short step from the last century to our time, such a legend could easily survive until today. Various pranks, hoaxes, and more tall tales would add to the legend, and such a potentially fearsome creature's existence could lend awe and romance to wild areas far from most people's daily lives.

Of course Boone's biographer may be wrong. There is some chance that Boone and others of the early frontier encountered creatures long since driven deeper into the wilderness by the advance of settlers and civilization. In that way, Boone's tale *could* represent actual evidence of a Bigfoot-like animal. But the new biography by Faragher strongly indicates a literary origin and must not be ignored theoretically since it casts doubt that such a creature even exists.

Hugh Trotti is a member of the Georgia Skeptics.

* * *

Confessions of a Lone Skeptic: A Response to Published Misinformation

ELENA M. WATSON

I live in Norfolk, Virginia, a four-hour drive from our nation's capital. So why do I belong to a skeptics' group based in a city four hours away by car? For my sanity mostly. There are no Eastern Virginia Area Skeptics, so I find it comforting to know that within my own region there are other open-mindedly skeptical folks, even if they don't live next door.

Not that the Tidewater/Hampton Roads area is some rural backwater, mired in primitive superstition and sorcery. True, some refer to it as Backwater instead of Tidewater, but, it's hardly the sticks. From Virginia Beach to Williamsburg, the area known as Hampton Roads contains a population of nearly one million. We also have a number of colleges, such as William and Mary, NASA-Langley, and the Eastern Virginia Medical School. With all of these educational and scientific institutions nearby, why am I the only person who writes critical letters to the editor when the local newspapers (the *Virginian-Pilot* and *Ledger-Star*) print stories on the advantages of fire-walking or on local UFO reports? Is it just that I have too much time on my hands?

Perhaps the reason for this is the same as it would be anywhere else. The claims are seen as trivial ("So what if people think fire-walking is going to improve their lives!"); harmless ("Hey, who does it hurt if someone thinks he's seen a flying saucer instead of Venus?"); or not worth the effort to investigate. There is often a tendency to assume that people don't really believe that stuff anyway.

The latter attitude was expressed by Jim Raper, managing editor of the *Virginian-Pilot* and *Ledger-Star*, in regard to astrology columns. Shortly after it was revealed that Nancy Reagan had consulted an astrologer while in the White House, Kerry Sipe, public editor of the *VP/LS*, devoted

"Hard news and investigative pieces . . . have a high degree of accuracy. . . . Human interest pieces are treated more casually."

his weekly column to the issue of horoscopes. Sipe interviewed Paul Kurtz, chairman of CSICOP, and endorsed CSICOP's campaign to include a disclaimer above astrology columns, proclaiming them to have no basis in reliable fact but to be presented merely for entertainment value. Raper had no disagreement with the disclaimer, but felt there was no need for his papers to run it because "I can't imagine that there are many people who take newspaper horoscopes seriously. It's clearly understood that they are there for entertainment." Sipe commented that he'd like to share Raper's confidence "that people can always distinguish between wisdom and whimsy. But I'm afraid I can't."

Considering that Sipe is the *public* editor, meaning that he is the person people deal with when they have a complaint or criticism about the con-

tent of the paper, this last statement would seem to carry a lot of weight. He has frequent direct communication with the readers, unlike Raper, and thus is a better judge of how well they can discriminate between the plausible and the fantastic. If he is unsure about the public's ability to critically assess what they read, I'd believe him. And

"Journalists have different criteria for different kinds of stories."

that is kind of scary. It's not that I consider the public to be stupid. In my view, there are two aspects to the problem. One is that journalists have different criteria for different kinds of stories. Hard news and investigative pieces are expected to have a high degree of accuracy. Feature stories and human interest pieces are treated more casually, as entertainment. But the difference is not always apparent to readers.

The second aspect of the problem is that often people aren't sure what to think. They may see science as just something that confuses them. So by default they fall back on their beliefs. It can and does happen to all of us at times. And popular culture is full of assumptions about the paranormal, such as: "Well, there must be something to it, or so many people wouldn't be seeing them (fairies, UFOs, Yeti, etc.)"; and "Everyone is a little bit psychic."

So what can I, a mild-mannered but skeptically minded housewife with some extra time on my hands, do about any of this? Well, for starters, because I think uncritical articles endorsing wild claims, even in "soft" feature stories, just add to public misconceptions, I usually complain to the public editor—but (and this is the important part) not before doing my homework! This means that I try to research the particular claim first. Then I may call the public editor, but I usually also write to him in a detailed, logical manner. I also write letters to the editor for publication, which I try to keep as succinct as possible. But since they have always been printed, I suspect that the *Virginian-Pilot* prints all letters to the editor that it receives.

Does it do any good? I'd like to think so. And I've managed to have my say and still maintain open lines of communication with the paper. I've even had some nice letters from the public editor. Maybe someday we'll actually have an active Backwa—sorry, Tidewater skeptics' group.

This article originally appeared in the Skeptical Eye, *the newsletter of the National Capital Area Skeptics (vol. 5, no. 3) in the summer of 1991. With this article, Elena Watson became one of the most active members of NCAS and a regular columnist and reporter for the newsletter. In 1992, she traveled to Dallas to cover the CSICOP conference for the* SKEPTICAL INQUIRER; *her report on that meeting appeared in the Spring 1993 issue. Just a year later, in the spring of 1994, this clear-sighted, intelligent, and courageous woman, who used to say that she found her wheelchair handy for making crop circles in the living room carpet, died at the age of 36. To those who knew her—personally, through her writing, or as one of her many e-mail correspondents—her death is an immeasurable loss.—Lys Ann and Steve Shore*

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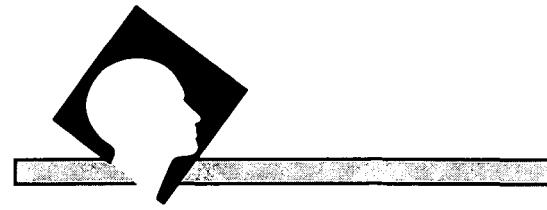
Letters to the Editor



Growth of antiscience

Paul Kurtz ("The Growth of Antiscience," Spring 1994) is right to sound an alarm about recent growth in antiscientific sentiment. But the admonition "know thine enemy" was never more appropriate than it is here. To illustrate this, let me cite some things in the article with which I am not entirely comfortable:

1. I think Kurtz is a bit too hard on George Brown, Freeman Dyson, and critics of the superconducting supercollider. I would have to wonder a little about anyone who hasn't had at least some serious doubts about the appropriateness of much modern technology, or about "big science." It is important to differentiate attitudes toward science itself from other things, such as doubts about the applications of science and whether a given project is too costly in relation to any benefits that can reasonably be expected.

2. It seems unlikely to me that efforts to educate the public about science are a promising area of endeavor. There is plenty of information available now, from countless sources, about all kinds of scientific topics, to almost anyone who really wants it. While education surely fails to mentally prepare many to accept the information that is available, we need to look deeper at why this is so. Throughout history, fanatical and irrational ideas have flourished most in times of social disruption.

3. It is worth asking how much of the antiscience phenomenon is really new. I pose this as a question, not as a statement. If, for instance, reliable statistics show that some index of antiscientific sentiment has increased by a particular percentage, that is cause for serious concern. But "extraordinary popular delusions and the madness of crowds" have been with us as long as the human race, and we should not be surprised that they are easily visible in an age of mass media.

I've had my own doubts about the ultimate value of modern science and high technology. In most cases, the conclusion arrived at was that there is no reason to suppose that the tools of science and technology create as much harm as good, but rather that the answer eventually depends on who controls their use. But even if my doubts had prevailed, that would not necessarily be a case of "antiscience."

Ronald W. Garrison
Durham, N.C.

In response to Paul Kurtz's impassioned defense of science, I would like to submit these salient observations. First, there are more ways of viewing science than through its relationship to antiscience. The dichotomous situation Kurtz creates in order to ground his argument tends to automatically negate the contributions of phenomenology, semiotics, and the paradigm of qualitative methodology. Much of the research that grounds the critique of the postmodernists comes from the rich contributions of this field. Second, the acceptance of pseudoscience by so many people, I believe, rests more upon individual insecurities and misconceptions about the nature of inquiry than upon a general desire to do away with mainstream science. Third, much of the postmodern critique is based not a desire to discard science as a methodological medium of research but more on a grounding that views the practice of scientific inquiry as occurring within

the ever evolving consensual norms of human society. As such, "hard" science has become an instrument at the disposal of powerful groups within dominant segments of our culture. How these powerful intellectual tools are utilized and who benefits from their discoveries forms the heart of much of the postmodern critique.

It is my contention that defending science by rejecting "antiscience" and thereby lumping critiques not seen as fitting the paradigmatic norms of objective science only weakens traditional science's ability to "continue to play [a positive role] in human civilization" (Kurtz, 263). In the end, I would argue that all of us have a stake in maintaining an open dialogue that will "re-enchant" an understandably disenchanted and uneducated public to the power *all* scientifically based inquiry has in improving their lives. Education is the answer, but that education must be based on a critical analysis of all the factors that impact human knowledge production.

Thomas A. Lifvendahl
Dekalb, Ill.

When we discuss the "antiscience threat," we ourselves need to be scientific. Paul Kurtz falls short in this regard.

He keeps talking about being "under heavy attack," of "dramatic growth of the occult, the paranormal, and pseudosciences, and particularly the promotion of the irrational and sensational in these areas by the mass media." He gives no evidence for these statements. In this country we have always had a strong antiscience attitude by a large fraction of the population. The Scopes trial was just one of the manifestations of this attitude. We have always had close control of curricula in a multitude of school districts by the various conservative religious groups in those communities. There has always been strong opposition to teaching evolution. The problem now is that the opposition is better organized.

We have always had claims of quackish cures for illnesses. In fact, this was much, much worse just a hundred years ago. We have always had sensationalist mass media. The problem is that communication is much easier now, so the reporting is more widespread. . . .

R. Thomas Myers
Kent, Ohio

After reading Paul Kurtz's polemic on "antiscience," I still wonder:

1. Is there such a thing as "antiscience," a cultural movement underlying both New Age silliness and the political defeat of the superconducting supercollider? The only "evidence" I know of has been the declarations of scientific spokespersons that such a movement exists. Is there quantitative documentation of increasing resistance to science and scientists?

2. If "antiscience" exists, what harm will it cause? For eight years, the U.S. had a president who consulted astrologers. Ridiculous, yes, and irritating to the extent that it might encourage the social acceptance of charlatans, but has there been material harm? Remember that science funding boomed during the Reagan administration.

3. If there really is a problem, should the response be a call to arms on a "battlefield of ideas"? Should we be evangelists for scientific methods in realms of human activity where these methods never developed on their own, where most knowledge is inherently unreliable—ethics, politics, religion, aesthetics? Is the best defense a good offense?

4. What limits *can* we acknowledge on the validity of the scientific worldview, or on its capacity to improve human experience? Can we not acknowledge *any* value in nonscientific means humans use to seek guidance for their actions?

Michael Shimazu
Valatie, N.Y.

The "antiscience threat" is only part of a larger scenario, "The Great American Decadence." Academia has been invaded

by the forces of ignorance, stupidity, and totalitarianism, the latter as vicious as anything in Nazi or Stalinist universities. Those who have followed the case of Professor Silva in the *New York Review of Books* will appreciate this. His career is ruined because someone took exception to some innocuous remarks he made in the classroom. Along with these politically correct thought police there is the belief that all cultures are equally valid, even a hypothetical one devoted to cannibalism where the moon is made of green cheese. There is even a college course wherein it is taught that the ancient Egyptians were black and flew about in gliders. Cleopatra was black also. (Shades of the Ptolemies!)

Do the deconstructionists think that in some cultures Newton's apple would fall upward? Do they believe that a space capsule could be equally well guided to the moon or that one could look out through the TV on the landscape of Mars by the incantations of a shaman?

Unfortunately this sort of thing isn't going to be combatted by polite, well-reasoned denials like those of Kurtz and Holton. These are symptoms of a rotten social structure.

Michael Wales
Kula, Hawaii

Paul Kurtz's article was very passionate and well thought out. The quibble I have with it is that, while he is clear and specific about the threats to scientific inquiry as we know it from outside of science, he was vague and nonspecific about the dangers from within. This is most clear in two places:

In Point 1, nuclear, he mentions "some danger of fallout." Historical events, e.g., the deliberate, "scientific" testing of nuclear products on uninformed civilians, as well as groundwater and air contamination around installations using large amounts (tons, not grams) of radioactive substances, show fallout is a real, current, and ongoing danger. Also Kurtz mentions "the accident at Chernobyl," but in fact, apprehension was caused not by one accident but by accidents at Chernobyl *and other power plants*. What were the dangers to science from within? I would suggest overenthusiasm, carelessness, arrogance, "tunnel vision," and too rapid commercialization. Most dangerous was adopting official secrecy as part of scientific technique. Secrecy is certain to breed fear and rumors. As long as "scientists" connive with secrecy, whether motivated by fear of a political enemy, fear of lawsuits, or fear of competition from other scientists, an antiscience backlash will continue.

In Point 10, "multicultural and feminist critiques of science *education*" are not necessarily antiscience. What is scientific about sexual harassment and racial prejudice? There have been women scientists, and many of them were actively discouraged/persecuted, as if male sex were a necessary part of being a scientist. The University of California was caught juggling its entrance requirements to avoid predominantly Asiatic enrollment in its engineering schools. We need more scientific objectivity in science education, which does not translate into fewer white males, but into more nonwhites and females, so that ratios change. . . .

Thank you for publishing this most provocative and stimulating essay. I hope my comments will be useful.

The Rev. Theolinda Knight
Berkeley, Calif.

Paul Kurtz raises many important points. But, in his justified zeal, he sometimes paints with too broad a brush. As a parent of two mentally disabled children and an advocate for deinstitutionalization, I am concerned by his dismissal of the deinstitutionalization movement as pseudoscience.

Those of us who advocate deinstitutionalization do not do so because we believe, with Thomas Szasz, that mental illness does not exist. Nor do we deny that there is such a thing as a standard of normality against which mental illness and disability can be measured. We simply believe, for rational reasons,

that the needs of mentally ill and disabled persons can often be better served in less restrictive settings. . . .

Mark S. Painter, Sr.
Mont Clare, Pa.

Paul Kurtz responds:

I can only touch on some of the points raised in the letters above. Ronald W. Garrison's doubts about the "ultimate value of modern science and technology" itself illustrates the growing antiscience attitude today. The denial of funding for the superconducting supercollider and the SETI project, in my judgment, reflects a lessening of appreciation for the value of theoretical research. If the supercollider research project is too expensive and wasteful, why has the European Consortium decided to go ahead with a similar product? The SETI project had a very modest request for funding. Granted that "extraordinary popular delusions and the madness of crowds" have always been with us, but the continued prevalence of such views today is unsettling, given the continued progress in scientific research. A chief antidote for antiscience, I submit, is education in critical thinking and a public appreciation for the value of the scientific outlook.

In answer to Thomas A. Lifvendahl, I do not have a narrow conception of science, and surely leave room for qualitative methodologies. I view the postmodernist critique of science and technology, however, as a serious, radical attack on its very foundations of science. Granted the sciences have often been used by powerful forces with negative results. But this is not the fault of science per se; it is a broader sociopolitical problem.

R. Thomas Myers asks for evidence for the claim that there has been a dramatic increase in the occult, the paranormal, and pseudoscience in the mass media. The CSICOP staff monitors hundreds of hours of TV programs and receives thousands of news clippings annually. Very few present balanced scientific appraisals. We find that what was once considered fringe matter by the media (for example, extraterrestrial abductions) is now mainstream. Perhaps sensationalism is on the rise because, as he notes, "communication is much easier, so that reporting is more widespread."

In answer to Michael Shimazu, I do think that there is an antiscience cultural movement now growing, and that if it continues to gain ground this would be harmful. Though the scientific worldview and the sciences are not immune to criticism, they present the most effective methods for understanding nature and coping with human problems. This does not deny other dimensions to human experience.

Michael Wales has illustrated other aspects of the new irrationalism. I don't think it is due simply to a "rotten social structure," however.

I agree with Theolinda Knight's critique of scientific "secrecy" and the constraints placed upon science by political, legal, and economic forces. In its best sense, science should be open to all inquirers. I surely support the entrance of more women and minorities into science; my objection to feminist and multicultural critiques of science concern the effort to interpret the knowledge itself in gender or ethnic terms, a new form of relativistic subjectivity.

I appreciate Mark S. Painter, Sr.'s point that the deinstitutionalization of many mentally disturbed and disabled patients has some merit. As he recognizes, I was objecting to the total rejection of psychiatry and the use of psychotropic drugs, as well as the denial that schizophrenia, manic depression, and other illnesses actually exist. This I view as symptomatic of a broader attack on medical science and the increased public acceptance of "alternative holistic medicines."

Miracles and skepticism

Because David Hume is so important in the history of skepticism, it's quite important that he be correctly understood. William Grey's article "Philosophy and the Paranormal, Part 2: Skepticism, Miracles, and Knowledge" (Spring 1994) misrepresents Hume in at least two important respects.

First, Hume's exclusive concern in "Of Miracles" is with the value of *human testimony* as evidence for the occurrence of miracles. Grey nowhere suggests this, but rather implies that Hume is concerned generally with whether we might

ever be justified in believing that a miracle occurred. Hume says absolutely nothing in this essay about what it would be rational to believe if we experienced the alleged miracle firsthand.

Second, Grey attributes to Hume the view that "it would never be rational to support that [miracles occur]." Hume explicitly *denies* this. In fact, he not only tells us when it would be rational to believe that a miracle had occurred, but even tells us when human testimony would justify such belief. Hume writes that "there may possibly be miracles, or violations of the usual course of nature, of such a kind as to admit of proof from human testimony," and he proceeds to show what one would be like.

Grey takes Hume to define a miracle as "something that violates a law of nature." On the basis of careful reflection, Hume's final position is that, as a matter of historical fact, no report of a miracle so defined has ever been credible. That's not nearly as dramatic or interesting as "it would never be rational to suppose that [miracles occur]."

Hume does make a stronger and more interesting epistemological claim about miracles defined in a different way—"accurately defined," as Hume says. But Grey neglects the definition of a miracle that Hume regards as the correct one, and so distorts Hume's most important points. I invite anyone interested in the matter to read Hume.

William A. Wisdom
Bryn Mawr, Pa.

Despite William Grey's advice that the skeptic not reject disputed claims a priori, his definition of skepticism amounts to just such an a-priori rejection of miracle claims. He first states the popular definition of a miracle as "an event that is extremely unlikely," then writes that "Hume had a stronger sense of 'miracle' in mind, namely, something that violates a law of nature." But the only thing more unlikely than the "extremely unlikely" is the simply impossible, a definition that amounts to an a-priori rejection.

It is not clear which definition of miracle Grey advocates, but his skepticism is an a-priori rejection of the miraculous even under the weaker definition. Grey's skeptical attitude is "refusing to accept as true claims for which there is insufficient or ambiguous evidence, and recognizing that withholding belief is preferable to accepting claims for which there are not sufficient grounds." But it is not possible to find enough evidence to make a probabilistic case that the essentially improbable has probably occurred. And miracles are not replicable ("for any extraordinary claim to gain respectability, it has to be replicable by someone somewhere") whether they are "violations of a law of nature" or "extremely unlikely."

David Tye
Danvers, Mass.

William Grey's article noted that Hume thought that we should not believe in things that violate the laws of nature, since various factors—like the suspicion that witnesses were either deceived or deceiving and our understanding of the human affinity for believing novel, surprising, marvelous tales—discredit all such miraculous claims.

In antiquity, Herodotus, the father of history, was constantly referred to as a liar for recounting wild, outrageous stories in his "History" like the tale of the gold-digging ants. Yet Herodotus himself explicitly rejected an outlandish claim made by the Pharaoh Neco's Phoenician sailors, who said that they circumnavigated Africa and "reported, what I cannot believe though somebody else may, that when sailing westward they had the sun on their right." Today we believe that marvelous tale because of the "miraculous" event which Herodotus rejected, namely, that the sun was located on the right when the fleet sailed westward around the Cape of Good Hope.

What is or is not miraculous depends on the context. Is a dead person's coming back to life a miracle? Not if a super-

natural being constantly intervenes in our world to override the unnatural occurrence of dead people returning to life. Then, a dead person not coming back to life becomes a miracle. Five hundred years hence the modern materialistic, mechanistic outlook will look as outdated as the medieval worldview does today. Already a postmodernist might contend that, since the context is boundless, such issues as what is or is not a miracle are undecidable. Even were there a single universally valid context that was knowable by humans, we have little reason to believe that we now know what that proper context will turn out to be.

Donald F. Nigroni
Glenolden, Pa.

William Grey replies:

William A. Wisdom takes me to task for allegedly misrepresenting Hume on two issues. First, he says my account mistakenly suggests that Hume was interested quite literally in whether we might be justified in believing that a miracle occurred, rather than in the narrower issue of the adequacy of human testimony to warrant belief in the miraculous. Second, Wisdom claims that I mistakenly attribute to Hume the view that it would never be rational to suppose that a miracle has occurred.

On the first point, I believe that Hume was *interested in the broader issue. He devotes much of "Of Miracles" to the value of testimony, for the very good reason that that's how claims for the miraculous come to our attention.*

However, Hume is silent, Wisdom says, about what we would say were we to witness a miracle firsthand. But is he? I think Hume does include some relevant observations on this issue, most important, that as a matter of fact we simply don't have such anomalous experiences. As Hume says, a "judicious reader" is apt to say that "such prodigious events never happen in our days."

But what would be the response of a rational inquirer to a firsthand experience of a miracle? I think the example Hume uses to illustrate the possibility of proof of miracles by human testimony, mentioned by Wisdom, is relevant to this question. If the weight of testimony were sufficiently strong, Hume says that instead of "doubting the fact" we "ought to search for the causes." One way of interpreting this is as the process of naturalizing anomaly. What appeared miraculous within one context of beliefs ceases to be so when the context is modified.

Wisdom, I think, is wrong in supposing that "Hume's exclusive concern in 'Of Miracles' is with the value of human testimony *as evidence for the occurrence of miracles." I think Hume was concerned with the more general issue of dealing with the conflict of evidence that can arise within our experience, although testimony is the most common and also the most important source of such conflict. As Hume says: "It is experience only, which gives authority to human testimony; and it is the same experience, which assures us of the laws of nature."*

But even if Wisdom is right that Hume's argument is addressed only to those of us who have not witnessed a miracle firsthand, it is still of considerable interest. Those of us who have not witnessed a miracle firsthand (of which I am one) presumably must decide what to make of the testimony of others, and for us at least Hume's discussion is very helpful. Those readers who have had the good fortune to witness a miracle are, I concede, unlikely to be persuaded. But I suspect that such people will have little inclination to study Hume, and will not profit from his essay.

Regarding Wisdom's second point, I concede that my claim that "it would never be rational to suppose that miracles occur" might be interpreted as the claim that no evidence would be sufficient to warrant belief in their occurrence. This interpretation is certainly inconsistent with my claim elsewhere that Hume's denial is empirical rather than a priori. I hope it is clear (to judicious readers) that my claim was that rational belief in miracles is not warranted on the basis of credible evidence, not that there is no conceivable evidence that could warrant rational belief in their occurrence.

Because I don't think (and I don't think that Hume thought) that we can rule out miracles a priori, it is conceivable that some-

one (such as Donald F. Nigroni) could *come up with compelling evidence that would lead me to revise my beliefs about miracles. That would surprise me greatly, to be sure, but it's not impossible.*

However, I don't accept David Tye's claim that "the only thing more unlikely than the 'extremely unlikely' is the simply impossible." As Hume says, "In our reasonings concerning matters of fact, there are all imaginable degrees of assurance." I also reject Tye's claim that Hume's (or Grey's) skepticism about miracles is a priori on either the stronger or the weaker definition.

It is gratifying that what Hume said and meant 250 years ago is being seriously addressed in a nonprofessional journal. I believe that this indicates the lasting value of his contribution to human knowledge. In conclusion, I would like to echo Wisdom's invitation for anyone seriously interested in these issues to read Hume's essay "Of Miracles."

William Grey
Department of Philosophy
University of New England
Armidale, Australia

Archaic concepts

In his essay "Philosophy and the Paranormal," Part 1" (Winter 1994), William Grey defines psychokinesis as the power to effect physical happenings through thought or by an act of will alone. The definition touches on a problem. How on earth can an experimenter reliably know that a subject in a psychokinetics experiment has an internal state called "will" or "act of will"? Where, precisely, is the act? Are there independent criteria to test for the presence of a self-reported "act of will" in someone's mind?

"Act of will" is essentially both a causal concept and a "mental process" concept belonging to folk psychology, which has been woefully inadequate in explaining human behavior. (See page 46 of Paul Churchland's *Matter and Consciousness.*) As "process" is by definition a theoretical construct, it is logically impossible to directly access any mental process by consciousness or introspection. (See page 204 of *Human Inference: Strategies and Shortcomings of Social Judgment,* by Nisbett and Ross).

Cognitive psychology shows that introspection is not a reliable source of data on personal causality. For too long the "givens" of consciousness have been treated as the next best thing to infallibility. Just what is the worth of the subject's claim that he is willing something to move? Can he know what he is talking about? "Act of will" has no counterpart in empirical psychology, so why should it be allowed into the conceptual framework of a scientific experiment? Why not go all the way and throw in "soul" and "faculties"? Perhaps we will have to put up with the comedy of paranormal research until the advance of the neurosciences forces a radical materialistic revision upon the defective maps of folk psychology.

John Snowden
Tarragindi, Australia

Clinical psychologists do know psychology

Regarding Terence M. Hines's article "Examining the Satanic Panic . . . A Sociological and Historical Perspective" (*SI,* Spring 1994), I too have encountered individuals in the mental-health field who seem to know little of psychology and science, but clinical psychologists holding either a Ph.D. or a Psy.D. degree have not been among them. For those who are unaware, the Psy.D. (Doctor of Psychology) is a doctorate in Professional Psychology. The specialty area of Psy.D. programs is almost always Clinical Psychology, but there is at least one Psy.D. program in Counseling Psychology and a few such programs in School Psychology.

The training in clinical Psy.D. programs emphasizes the application of scientific findings to clinical practice, but is less oriented to training in conducting research than is a traditional Ph.D. program. In the course of my own training at Baylor University's Doctor

of Psychology program, I took required courses in Learning (including memory), Perception, Experimental Design/Statistics, Psychometrics, Social Psychology, Personality, Developmental Psychology, Neuroanatomy, Psychopharmacology, Medical Psychology, and Psychopathology, in addition to various courses in Psychological Assessment and Psychotherapy. The American Psychological Association (APA), in fact, provides guidelines for the curricula of all APA accredited programs in Professional Psychology to ensure that courses from the major domains of psychology are included. Clinical psychologists, particularly from APA accredited programs, can be expected to have a broad knowledge of psychology, whether the degree is a Psy.D. or a Ph.D.

Andrew R. Reisner, Psy.D.
Psychologist/Chief Clinical Officer
Community Counseling Services
Galion, Ohio

I must take exception to one point in Terence Hines's otherwise excellent and informative article, the gist of which I agree with completely. Hines uses a fairly broad brush to suggest that non-M.D. psychotherapists (i.e., clinical psychologists, social workers, counselors, etc.) "usually receive minimal training in psychology (i.e., topics like memory, perception, the physiological basis of normal and abnormal behavior) and critical and scientific thinking. This is often true of students who end up with master's or 'Psy.D.' degrees." I cannot speak for other professions and am not familiar with Hines's experiences, but I can assure you and your readers that anyone who has legitimately earned the right to call himself or herself a Clinical Psychologist (i.e., earning a doctorate from an accredited program, passing the appropriate state licensure exam) has had extensive training in all of the areas mentioned by Hines and then some. I am a state-certified School Psychologist and have completed all requirements for a Ph.D. in Clinical Psychology except for my dissertation. As requirements for my master's degrees and for my doctorate, I had to take courses in (and demonstrate proficiency via Comprehensive examinations) in a basic core curriculum of scientific studies, such as perception, learning, physiological psychology, neruopsychology, statistics (both univariate and multivariate), measurement and scaling, experimental design and research, etc. My training is the rule and not the exception; the "Boulder Model" of Clinical Psychology training mandates "scientist-practitioner" trainings and I think it is not an accident that the "scientist" aspect is listed first. Scientific and critical thinking abilities are absolutely required if one is to successfully complete training in an approved and accredited Clinical Psychology program and earn a Ph.D.; requirements for a Psy.D. and a master's degree are somewhat less rigorous, in that empirical research-based dissertations are not usually required, but an ability to think critically certainly is, as is a demonstrated competence in the core curricula of psychology.

That said, I reiterate that Hines's article is an excellent summary and review and is absolutely right on the mark in indicating that naive therapists, law-enforcement personnel, religious counselors, child-protection workers, etc., often fall too readily into the trap of taking everything said by an individual as literal truth and of seeing skeletons and monsters under every bed; I have had personal experience in this very regard in dealings with local Social Services agency personnel.

Thank you for your attention to this letter. I commend you for the continued excellence, informativeness, and necessity of the material you publish. You perform an invaluable service.

Patrick McCabe
Certified School Psychologist
Accord, N.Y.

In the midst of berating psychotherapy students for turning down his advice to

include electives like Statistics, Psychology, and Experimental Methods (excellent advice, too, if you ask me), Terence Hines suddenly turns savagely on his fellow faculty members over in the School of Education.

Now don't get me wrong. As a onetime faculty member in a university engineering department, I confess to my share of poor-mouthing some of the products of some of our colleges and schools of education; and even some of what have been called "Porfessors of Ecudation." But ". . . schools of education select the least able students to each our children, and provide them with the poorest training. . . ." Does this mean *all* the students in *all* the departments of Education? Them is hard words, podner.

I hope Hines is prepared to quote chapter and verse in a nice range of incontrovertible studies, subjected to peer review and demonstrating the truth of these statements. Because, brother, he (and you) are due for a ton of mail demanding such proofs!

C. R. Draper
Brookings, Ore.

Terence Hines replies:

My comments regarding the training of non-M.D. psychotherapists and the abilities of graduates of schools of education that the writers above take exception to were obviously generalizations. Of course there are exceptions to any generalization. I am certain that there are psychotherapists who have superb training in the scientific evaluation of the effectiveness of therapies, for example. Such therapists would be able to put aside the numerous cognitive illusions that cause the vast majority of other therapists to believe, in good faith, in the effectiveness of their particular brand of therapy, be it psychoanalysis, one of the scores of "humanistic" therapies, repressed-memory therapy, or the application of sheep dung to the patient's knees. Alas, such individuals are rare, as has been clearly documented by Robyn Dawes in his excellent book House of Cards *(Free Press, 1994). Therein, Dawes points out that although therapists at APA-accredited schools may receive the window-dressing of courses in statistical methods and the scientific aspects of the field of psychology, they use what they should have learned in these courses almost not at all.*

As to the graduates of schools of education, some are no doubt quite bright. But, subjected to programs of vacuous courses in educational "theory" and how to prepare lesson plans and (usually) very little training in the area they will actually teach, they emerge with a degree that almost guarantees that they will be incompetent to teach their subject. Witness, for example, the recent poll showing that a considerable minority (about 40 percent, if I recall) of high-school science teachers rejected the theory of evolution.

Dianetics/Scientology

Recently I was reading some of my old science-fiction magazines. In the November 1940 issue of *Astounding Science Fiction*, I came across a story called "One Was Stubborn," by Rene Lafayette. In this story, an unscrupulous "prophet" manages to promote himself to god and, eventually, to abolish the world by putting across a bogus religion.

I was reminded of Scientology, especially when I came across a passage which read, "*Of course I knew that everybody in the Universe was bored and would welcome any kind of diversion and that such a time, according to my 'Tribbon's Rise and Fall of the American Empire' provided unscrupulous men with a host of willing dupes for religious experimentation.*" Now, doesn't that sound like L. Ron Hubbard and Scientology? (For those who are unfamiliar with the history of science fiction, I should mention that the cream of the jest is this: "Rene Lafayette" was a pseudonym used by L. Ron Hubbard.)

Kenneth W. Meyer
Oxnard, Calif.

False memories

I especially appreciate your articles on "false memories."

In the past, CSICOP was accused of

being spoilsports: if Shirley MacLaine wanted to make a fool of herself reliving "previous lives," who was being harmed? Perhaps for the first time, however, 20 years of New Age irrationality are claiming thousands of real victims: elderly parents defamed by fantasies of early childhood molestation, implanted in gullible middle-aged patients by incompetent psychotherapists or by do-it-yourself quack psychotherapy manuals (*The Courage to Heal*).

Hugo S. Cunningham
Boston, Mass.

Editor's Note: Our next several issues will have more on this important subject. See also Martin Gardner's Notes of a Fringe-Watcher in this issue.

CBS's credulous UFO special

I watched with disappointment the CBS special on UFOs (April 20, 1994, 10:00 P.M. EDT). The credulous, uncritical viewpoint reminded me of the NBC special concerning Noah's Ark. The strongest advocate for the existence of UFOs and alien abductions, as presented in the program, was John Mack. With his educational background and prestigious university affiliation, he was presented as a most credible advocate. Take away his "testimony" and the pro-UFO viewpoint of the program falls apart.

Credible scientists like Carl Sagan are, through subtle editing, portrayed by CBS as sympathetic to UFOlogy, and, by extension, add to the credibility of alien abduction.

I am looking forward to a SKEPTICAL INQUIRER exposé on this shameful airing by CBS's program "48 Hours."

Arthur Pomerantz
Craigsville, Va.

The blind girl who saw

Regarding the article (*SI*, Fall 1993, p. 63) about Georgia Green and the comments on it in Spring 1994 p. 324), I was startled to find that the story had provoked so much controversy and very surprised at the author's comment that "it made no sense scientifically."

I was involved peripherally in the Trinity test, and later the same day I picked up a newspaper in a barber shop in Albuquerque (probably the *Journal*) and read about Georgia. The possibility that the report might not be true never even occurred to me. It seemed obvious to me that only people whose eyes had been removed or their optic nerves severed would not have "seen" the flash.

I was ten miles from the explosion, lying face down with my feet toward the tower and my eyes tightly shut. The main thing that I remember was that for several seconds the light was so overpoweringly bright that I wondered whether I would be able to see when I opened my eyes. I am sure that nobody lied about Georgia. She could easily have detected this light even though she could not see anything else.

Conway W. Snyder
Canyon Country, Calif.

Satisfying needs

Regarding "Headlines That Didn't Happen: Psychics Blow It Again in 1993," (*SI*, Spring 1994). I support your evaluating and publicizing the (non-)performance of "psychics." But picking on the *Weekly World News* is like debunking the *Journal of Irreproducible Results* or even *Mad Magazine*. I read *WWN* for colorful disinformation.

Strictly logical, scientific means probably won't move the serious audience of psychics toward rationality. I hope that CSICOP's tactics for combatting superstition include means that are respectful of psychics' consumers and that offer positive alternatives for satisfying the needs that psychics meet.

Clinton B. Walker
Alexandria, Va.

Estling a joy to read

One of the very best writers to have appeared in your pages in recent years is Ralph Estling, who should be encouraged to write more. The fresh view he takes of important issues and his witty and lucid English style make his work a pure joy to read. Some more information about him—with due respect to his privacy—would also be welcome.

Martin Reading
Vienna, Austria

Editor's note:

I agree with everything Martin Reading says. See Estling's Forum column "Deep Ecology or Deep Sanity" in this issue (p. 539) for his latest. In response to your interest, here's a little of Estling on Estling:

"Ralph Estling was born in New York in 1930 and grew up there and in the San Francisco Bay area. He attended the University of California at Berkeley, where he edited the student humor magazine and once got Walt Kelly to contribute an original Pogo *story. Estling was a foreign service officer with the State Department from 1957 to 1969 and received a medal and the sack virtually simultaneously, the former for what he did in Vietnam, the latter for loudly complaining about it. In 1971 he moved to England with his British wife and became a teacher in the English equivalent of high school. In 1988 he retired. He lives in a thatched house in Somerset. Besides writing for the* SKEPTICAL INQUIRER *he is a regular contributor to* New Scientist *and, much less regularly, to* Nature. *He dislikes irrationality and all that goes with it, but most especially the irrationality of some scientists, who really ought to know better. He hopes he doesn't sound too pompous."*

Donate SI's to library

I have a suggestion for *SI* readers like me who have compulsively saved all their back issues but who are beginning to run out of space: offer to donate them to your local library. I did that, and it was the final incentive for them to begin a subscription. (I had previously asked for *SI* on their annual magazine surveys.)

Arleigh Hartkopf
East Brunswick, N.J.

The letters column is a forum for views on matters raised in previous issues. Brief letters (less than 250 words) are welcome. All are subject to editing. They should be typed double-spaced. Due to the volume of letters, not all can be published. Address them to Letters to the Editor, SKEPTICAL INQUIRER, *944 Deer Dr. NE, Albuquerque, NM 87122-1306.*

SKEPTICISM AND THE MEDIA
A CSICOP Seminar in Atlanta, October 28-30, 1994

Join us at this CSICOP seminar focusing on how to deal effectively with the media. The workshop leaders will be **Robert Baker,** University of Kentucky; **C. Eugene Emery, Jr.,** the *Providence Journal;* **William Evans,** Georgia Tech; and **Joe Nickell,** University of Kentucky. It will be held at the Holiday Inn Airport North, where room reservations are available at a special rate. The registration fee of $140 includes a Saturday night Banquet. For more information, call Barry Karr at CSICOP headquarters: **716-636-1425.**

Guide for Authors

THE SKEPTICAL INQUIRER: THE MAGAZINE FOR SCIENCE AND REASON critically examines claims of paranormal, fringe-science, and pseudoscientific phenomena from a responsible, scientific point of view and provides a forum for informed discussion of all relevant issues. It encourages science and scientific inquiry, critical thinking, and the use of reason and the methods of science in examining important issues. The readership includes scholars and researchers in many fields and lay readers of diverse backgrounds. Write clearly, interestingly, and simply. Avoid unnecessary technical terms. Maintain a factual, professional, and restrained tone. All submissions are judged on the basis of interest, clarity, significance, relevance, authority, and topicality.

Direct critiques toward ideas and issues, not individuals. Authors should be prepared to provide documentation of all factual assertions. A useful set of guidelines for those who seek to evaluate paranormal claims, titled "Proper Criticism" and written by Professor Ray Hyman, is available from the Editor. Among the guidelines: clarify your objectives, let the facts speak for themselves, be precise and careful with language, and avoid loaded words and sensationalism. State others' positions in a fair, objective, and nonemotional manner.

Categories of Papers

Categories of contributions include Articles, Book Reviews, News and Comment, Forum, Follow-Up, and Letters to the Editor.

Articles: Articles may be evaluative, investigative, or explanatory. They may examine specific claims or broader questions. Well-focused discussions on scientific, educational, or social issues of wide common interest are welcome. We especially seek articles that provide new information or bring fresh perspective to familiar subjects. Articles that help people gain an understanding through naturalistic terms of unusual personal experiences are useful. So are articles that portray the vigor and excitement of a particular scientific topic and help readers distinguish between scientific and pseudoscientific approaches to answering key outstanding questions. Well-balanced articles that report on and evaluate controversial scientific claims *within* science itself are also needed.

Space is at a premium; there are always many accepted articles awaiting publication, and many submitted articles cannot be published. Be succinct. Articles are typically 2,000 to 3,500 words (about 8 to 12 double-spaced typewritten pages, depending upon font size). We cannot publish treatises. Articles should be organized around one central point or theme. If something is important it can be said briefly. Remember, Watson and Crick's paper reporting the discovery of the structure of DNA took just over one page in *Nature*.

The SKEPTICAL INQUIRER must be a source of authoritative, responsible scientific information and perspective. The Editor will usually send manuscripts dealing with technical or controversial matters to reviewers. The authors, however, are responsible for the accuracy of fact and perspective. It is good practice to have knowledgeable colleagues review drafts before submission. Reports of original research, especially highly technical experimental or statistical studies, are best submitted to a formal scientific journal; a nontechnical summary may be submitted to the SKEPTICAL INQUIRER. Studies based on small-scale tests or surveys of students will be considered only if they establish something new, provide a needed replication of some important earlier study, or test some new theoretical position.

Articles should have a title page that begins with a succinct, inviting title followed by a concise, 10-to-20-word statement of the article's main point or theme. This will be set in display type on the first page of the published article. The title page should also give the author's name and address. Include a brief cover letter stating that the article has not been submitted elsewhere and giving the authors' titles and affiliations and the lead author's address and home and office telephone and fax numbers (important!). Include information in the letter or at the end of the manuscript for a one- or two-sentence author note. If you do not wish your address given in the author note, please so state.

(continued on next page)

Book Reviews: Most book reviews are about 600 to 1,200 words. Both solicited and unsolicited reviews are used. Include publication data at the top of the review in this order: Title. Author. Publisher, city, year. Number of pages. Hardcover or paperback (or both), price. Include a suggested author note. If possible, include the dust jacket of the book for illustration.

News and Comment: News articles from 250 to 1,000 words are welcome. They should involve timely events and issues and be written in interpretative journalistic style. Use third person. The news sections of *Nature, Science, New Scientist,* and *Science News* are excellent models. Balance, fairness, and perspective are important. In reporting on controversies, seek and include comment and perspective from the various opposing parties.

Forum: The Forum column consists of brief, lively, well-written columns of comment and opinion generally no more than 1,000 words. Space allows only one or two per issue.

Follow-Up: The Follow-Up column is for response from persons whose work or claims have been the subject of previous articles. The original authors may respond in the same or a later issue.

Letters to the Editor: The Letters to the Editor section is for views on matters raised in previous issues. Letters should be no more than 250 words. Due to the volume of letters received, they cannot be acknowledged, and not all can be published. Those selected may be edited for space and clarity. Authors whose articles are criticized in the letters column may be given the opportunity to respond in the same issue.

Mechanical Requirements for Manuscripts

Text: Type all manuscripts *double-spaced,* including notes and references, on 8½" × 11" white opaque bond paper (not onionskin or erasable bond) with at least one-inch margins on all sides. If longer paper is used (e.g., A4), allow commensurately bigger top and bottom margins. Number all pages in sequence, including those for references, figures, and captions. For Articles, submit an original and two photocopies (for reviewers); for other categories, an original and one photocopy. Upon acceptance of a manuscript, the author will be asked to send a Macintosh or PC diskette of the article (ASCII file or any word processor format) to our production facilities at CSICOP headquarters in Amherst, N.Y.

References and Notes: For reference citations in text, use author-date style: Smith (1994) or (Smith 1994). Arrange entries within References section alphabetically by the last name of author. Give full names of journals. Lower-case article titles except for first word and proper names. Follow the style used in recent issues for other specifics. If explanatory notes are required, number them sequentially and include them in a Notes section preceding the References.

Figures and Illustrations: We encourage camera-ready illustrations with all submissions. Figures and graphs should be in high-quality camera-ready form. Photos should be black-and-white glossy prints. Assign each illustration a Figure number and supply captions on a separate sheet. Help and suggestions for obtaining other illustrations are welcome.

Proofs: Once the manuscript of an article, review, or column has been tentatively scheduled, copy edited, and phototypeset, we send proofs to the author. The proofs should be returned corrected within 72 hours. At the time proofs are sent, authors will be asked to sign and return a copyright transfer form. Upon publication, authors are sent several complimentary copies of the issue, plus a form for ordering reprints.

The Editor's fax number is: 505-828-2080. The fax may be used for important messages and inquiries. It is generally not for submission of manuscripts, with the exception of short editorial items from abroad or other brief contributions known to be urgent.

All manuscripts should be mailed to:

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Local, Regional, and National Skeptics Organizations

The organizations listed below have aims similar to those of CSICOP but are independent and autonomous. They are not affiliated with CSICOP, and representatives of these organizations cannot speak on behalf of CSICOP.

UNITED STATES

ALABAMA. Alabama Skeptics, Emory Kimbrough, 3550 Watermelon Road, Apt. 28A, Northport, AL 35476 (205-759-2624).

ARIZONA. Tucson Skeptics Inc. James McGaha, Chairman, 7049 E. Tangue Verde Rd., Suite 370, Tucson, AZ 85715. **Phoenix Skeptics,** Michael Stackpole, Chairman, P.O. Box 60333, Phoenix, AZ 85082.

CALIFORNIA. Bay Area Skeptics, Wilma Russell, Secretary, 17723 Buti Park Court, Castro Valley, CA 94546. **East Bay Skeptics Society,** Daniel Sabsay, President, P.O. Box 20989, Oakland, CA 94620 (510-420-0702). **Sacramento Skeptics Society,** Terry Sandbek, 3838 Watt Ave., Suite C303, Sacramento, CA 95821-2664 (916-488-3772).

COLORADO, WYOMING, UTAH, and MONTANA. Rocky Mountain Skeptics, Béla Scheiber, President, P.O. Box 7277, Boulder, CO 80306 (303-444-5368).

CONNECTICUT. (See New York Area Skeptics, New York.)

DISTRICT OF COLUMBIA, DELAWARE, MARYLAND, and VIRGINIA. National Capital Area Skeptics, c/o D. W. "Chip" Denman, 8006 Valley Street, Silver Spring, MD 20910.

FLORIDA. Tampa Bay Skeptics, Gary Posner, 1113 Normandy Trace Rd., Tampa, FL 33602 (813-221-3533).

GEORGIA. Georgia Skeptics, Becky Long, President, 2277 Winding Woods Dr., Tucker, GA 30084.

ILLINOIS. Midwest Committee for Rational Inquiry, Danielle Kafka, President, P.O. Box 2792, Des Plaines, IL 60017-2792. **Rational Examination Assoc. of Lincoln Land** (REALL), David Bloomberg, Chairman, P.O. Box 20302, Springfield IL 62708 (217-787-9098).

INDIANA. Indiana Skeptics, Robert Craig, Chairperson, 5401 Hedgerow Drive, Indianapolis, IN 46226.

KENTUCKY. Kentucky Assn. of Science Educators and Skeptics (KASES), Chairman, Prof. Robert A. Baker, 3495 Castleton Way North, Lexington, KY 40502.

LOUISIANA. Baton Rouge Proponents of Rational Inquiry and Scientific Methods (BR-PRISM), Dick Schroth, Director, 425 Carriage Way, Baton Rouge, LA 70808-4828 (504-766-4747).

MASSACHUSETTS. Skeptical Inquirers of New England. Contact Laurence Moss, Ho & Moss, 72 Kneeland St., Boston 02111.

MICHIGAN. Great Lakes Skeptics, Carol Lynn, contact, 1264 Bedford Rd., Grosse Pointe Park, MI 84230-1116.

MINNESOTA. Minnesota Skeptics, Robert W. McCoy, 549 Turnpike Rd., Golden Valley, MN 55416. **St. Kloud ESP Teaching Investigation Committee** (SKEPTIC), Jerry Mertens, Coordinator, Psychology Dept., St. Cloud State Univ., St. Cloud, MN 56301.

MISSOURI. Kansas City Committee for Skeptical Inquiry, Verle Muhrer, Chairman, 2658 East 7th, Kansas City, MO 64124. **Gateway Skeptics,** Chairperson, Steve Best, 6943 Amherst Ave., University City, MO 63130.

NEW JERSEY. (See New York Area Skeptics, New York.)

NEW MEXICO. New Mexicans for Science & Reason, John Geohegan, Chairman, 450 Montclaire SE, Albuquerque, NM 87108; John Smallwood, 320 Artist Road, Santa Fe, NM 87501 (505-988-2800).

NEW YORK. New York Area Skeptics (NYASk), Wayne Tytell, contact person, 159 Melrose Ave., E. Massapequa, NY 11758, (516) 798-6902. **Western New York Skeptics,** Tim Madigan, Chairman, 3965 Rensch Rd., Buffalo, NY 14228.

OHIO. South Shore Skeptics, Page Stephens, 6006 Fir Avenue, Cleveland, OH 44102 (216-631-5987). **Association for Rational Thinking** (Cincinnati area), Joseph F. Gastright, Contact, 111 Wallace Ave., Covington, KY 41014 (606-581-7315).

PENNSYLVANIA. Paranormal Investigating Committee of Pittsburgh (PICP), Richard Busch, Chairman, 8209 Thompson Run Rd., Pittsburgh, PA 15237 (412-366-4663).

TEXAS. Houston Association for Scientific Thinking (HAST), Darrell Kachilla, P.O. Box 541314, Houston, TX 77254. **North Texas Skeptics,** Joe Voelkering, President, P.O. Box 111794, Carrollton, TX 75011-1794. **West Texas Society to Advance Rational Thought,** Co-Chairmen: George Robertson, 4700 Polo Pky., Apt. 183, Midland, TX 79705-1542.

WASHINGTON. The Society for Sensible Explanations, P.O. Box 7121, Seattle, WA 98133.

WISCONSIN. Contact person: Roxine McQuitty, MATC-West, 1200 S. 71st St., West Allis, WI 53214 (414-456-5402, 414-873-4446, McQuitty@Music.lib.MATC.edu).

(continued on next page)

ARGENTINA. CAIRP, Director, Ladislao Enrique Marquez, Jose Marti, 35 dep C, 1406 Buenos Aires.

AUSTRALIA. National: **Australian Skeptics,**P.O. Box E324 St. James, NSW 2000. Regional: **Australian Capital Territory,** P.O. Box 555, Civic Square, 2608. **Newcastle Skeptics,** Chairperson, Colin Keay, Physics Dept., Newcastle University, NSW 2308. **Queensland,** P.O. Box 2180, Brisbane, 4001. **South Australia,** P.O. Box 91, Magill, 5072. **Victoria,** P.O. Box 1555P, Melbourne, 3001. **Western Australia,** 25 Headingly Road, Kalamunda 6076.

BELGIUM. Committee Para, J. Dommanget, Chairman, Observatoire Royal de Belgique, Avenue Circulaire 3, B-1180 Brussels. **SKEPP,** W. Betz, Secretary, Laarbeeklaan 103, B1090 Brussels (FAX: 32-2-4774301).

BRAZIL. Opcão Racional, Luis Gutman, Rua Santa Clara, 431, Bloco 5, Apt. 803, Copacabana - Rio de Janeiro 22041-010 (021-227-8694).

CANADA. Alberta Skeptics, Heidi Lloyd-Price, Secretary, P.O. Box 5571, Station A, Calgary, Alberta T2H 1X9. **British Columbia Skeptics,** Lee Moller, contact, 1188 Beaufort Road, Vancouver V7G 1R7. **Manitoba Skeptics.** Contact John Toews, President, Box 92, St. Vital, Winnipeg, Man. R2M 4A5. **Ontario Skeptics,** Henry Gordon, Chairman, 343 Clark Ave West, Suite 1009, Thornhill, Ontario L4J 7K5. **Sceptiques du Quebec:** Jean Ouellette, C.P. 202, Succ. Beaubien, Montreal H2G 3C9.

CZECH REPUBLIC. Contact Milos Chvojka, Inst. of Physics, Czech Academy of Sciences, Na Slovance 2, 1 80 40 Prague 8.

ESTONIA. Contact Indrek Rohtmets, Horisont, EE 0102 Tallinn, Narva mnt. 5.

FINLAND. Skepsis, Lauri Gröhn, Secretary, Ojahaanpolku 8 B17, SF-01600 Vantaa.

FRANCE. Comité Français pour l'Etude des Phénomènes Paranormaux, Claude Benski, Secretary-General, Merlin Gerin, RGE/A2 38050 Grenoble Cedex.

GERMANY. Society for the Scientific Investigation of Para-Science (GWUP), Amardeo Sarma, Convenor, Postfach 1222, D-64374 Rossdorf (FAX: +49 6154 81912).

HONG KONG. Hong Kong Skeptics. Contact Rebecca Bradley, P.O. Box 1010, Shatin Central Post Office, Shatin, NT.

HUNGARY. Hungarian Skeptics, János Szentàgothai, *Termeszet Vilaga,* P.O. Box 25, Budapest 8, 1444. Fax 011-36-1-118-7506.

INDIA. Indian Skeptics, B. Premanand, Chairman, 10, Chettipalayam Rd., Podanur 641-023 Coimbatore Tamil nadu. **Indian Rationalist Association, Contact** Sanal Edamaruku, 779, Pocket 5, Mayur Vihar 1, New Delhi 110 091.

ISRAEL. Israel Skeptics Society, Philip Marmaros, Chairman, P.O. Box 8481, Jerusalem.

IRELAND. Irish Skeptics, Peter O'Hara, Contact, St. Joseph's Hospital, Limerick.

ITALY. Comitato Italiano per il Controllo delle Affermazioni sul Paranormale, Massimo Polidoro, Editor, *Scienza & Paranormale,* P.O. Box 60, 27058 Voghera (PV).

JAPAN. Japan Skeptics, Jun Jugaku, Chairperson, 1-31-8-527 Takadanobaba, Shinjuku-Ku, Tokyo 169.

MEXICO. Mexican Association for Skeptical Research (SOMIE), Mario Mendez-Acosta, Chairman, Apartado Postal 19-546, Mexico 03900, D.F.

NETHERLANDS. Stichting Skepsis, Rob Nanninga, Secretary, Westerkade 20, 9718 AS Groningen.

NEW ZEALAND. New Zealand Skeptics, Vicki Hyde, Chairperson, South Pacific Publications, Box 19-760, Christchurch 5, N.Z., Fax: 64 3 384-5138.

NORWAY. NIVFO, K. Stenodegard, Boks 9, N-7082, Kattem. **Skepsis,** Terje Emberland, Contact, P. B. 2943 Toyen 0608, Oslo 6.

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SOUTH AFRICA. Assn. for the Rational Investigation of the Paranormal (ARIP), Marian Laserson, Secretary, 4 Wales St., Sandringham 2192. **SOCRATES,** Leon Retief, contact, 3 Hoheizen Crescent, Hoheizen, Bellville 7530.

SPAIN. Alternativa Racional a las Pseudosciencias (ARP). Javier Armentia, President, Apdto. 1516, 50080 Zaragoza. **El Investigador Escéptico.** Contact Felix Ares De Blas, Gámez/Ares/Martinez, P.O. Box 904, 20080 Donostia-San Sebastian.

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TAIWAN. Tim Holmes, San Chuan Road, 98 Alley, #47, Fengyuan.

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UNITED KINGDOM. SKEPTICAL INQUIRER Representative, Michael J. Hutchinson, 10 Crescent View, Loughton, Essex IG10 4PZ. **The Skeptic** magazine, Editors, Toby Howard and Steve Donnelly, P.O. Box 475, Manchester M60 2TH. **London Student Skeptics,** Contact: Bill Harman, 21 Manville Rd., London SW17 8JW. **Manchester Skeptics,** David Love, P.O. Box 475, Manchester M60 2TH. **Wessex Skeptics,** Robin Allen, Dept. of Physics, Southampton Univ., Highfield, Southampton S09 5NH.

The Committee for the Scientific Investigation of Claims of the Paranormal

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Electronic Communication Subcommittee: Chairman, Page Stephens, 6006 Fir Ave., Cleveland, OH 44102. **E-Mail:** Jim Kutz aa387@Cleveland.Freenet.edu

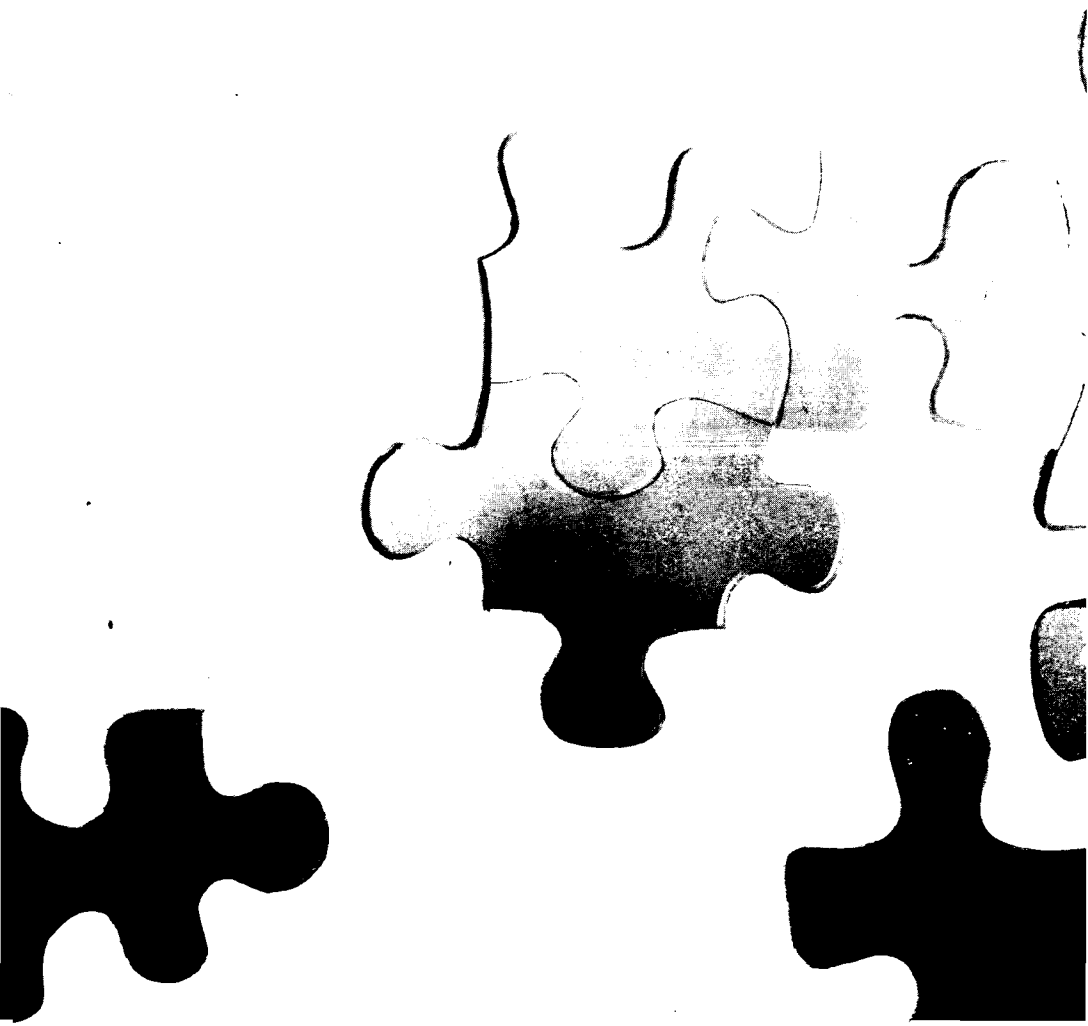
Health Claims Subcommittee: Co-chairmen, William Jarvis, Professor of Health Promotion and Education, School of Public Health, Loma Linda University, Loma Linda, CA 93350, and Stephen Barrett, M.D., P.O. Box 1747, Allentown, PA 18105.

Parapsychology Subcommittee: Chairman, Ray Hyman, Psychology Dept., Univ. of Oregon, Eugene, OR 97402.

UFO Subcommittee: Chairman, Philip J. Klass, 404 "N" Street S.W., Washington, D.C. 20024.

The Committee for the Scientific Investigation of Claims of the Paranormal

The Committee for the Scientific Investigation of Claims of the Paranormal encourages the critical investigation of paranormal and fringe-science claims from a responsible, scientific point of view and disseminates factual information about the results of such inquiries to the scientific community and the public. It also promotes science and scientific inquiry, critical thinking, science education, and the use of reason in examining important issues. To carry out these objectives the Committee:

- Maintains a network of people interested in critically examining paranormal, fringe-science, and other claims, and in contributing to consumer education
- Prepares bibliographies of published materials that carefully examine such claims
- Encourages research by objective and impartial inquiry in areas where it is needed
- Convenes conferences and meetings
- Publishes articles that examine claims of the paranormal
- Does not reject claims on a priori grounds, antecedent to inquiry, but examines them objectively and carefully

The Committee is a nonprofit scientific and educational organization. The SKEPTICAL INQUIRER is its official journal.